

**TRAFFIC IMPACT ANALYSIS**  
**For**

**Carilion Clinic Medical Building  
On Jefferson Street  
City of Roanoke, VA**

**For  
Carilion Clinic  
231 Jefferson Street  
Roanoke, VA 24011**

March 13, 2015  
**Revised: March 27, 2015**

Commission No. 3507



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## **CARILION CLINIC MEDICAL BUILDING TRAFFIC IMPACT ANALYSIS**

### **EXECUTIVE SUMMARY**

This document presents the results of the traffic impact analysis performed for a proposed 15 story building with parking in the five lower levels and medical facilities in the upper ten levels. The proposed development is located between Flannagan Drive and McClanahan Street east of Jefferson Street in the City of Roanoke, VA. The medical facility will be a part of the Roanoke Memorial Hospital complex. The development is proposed by Carilion Clinic

The primary access to the proposed development is via Jefferson Street; a secondary access will be from Flannagan Drive.

Jefferson Street is an urban collector street serving as a main connection for daily commuters from the Crystal Spring neighborhood to downtown Roanoke. Jefferson Street is currently operating adequately for the existing traffic volumes during the AM and PM peak hours; current ADT is approximately 7,000 vehicles per day.

Trip generation for the proposed development was performed using the Institute of Transportation Engineers (ITE) Trip Generation Manual, 9<sup>th</sup> Edition. The land use of the proposed development is represented by land use code 610 – Hospital in the Trip Generation Manual. Per the Manual, the proposed development generates 499 trips in the AM peak hour and 491 in the PM peak hour.

The proposed development includes parking consisting of 800 spaces. The parking will serve medical facility employees, patients, and the general public. Although the parking structure itself does not generate trips, it will result in parking turnover as patients and the general public utilizes the space and visit other facilities within the Roanoke Memorial complex. This turnover traffic is estimated to be 75 trips into and 75 trips out of the parking structure per hour. These additional trips are considered in this study.

It is anticipated that a portion of the existing traffic utilizing the existing parking garages on Reserve Avenue and Bellevue Avenue will utilize the proposed parking structure in future years. This redistributed volume is rerouted to the proposed parking structure from the Reserve intersection.

New trips to the area generated by the proposed development and reallocated trips from the existing Roanoke Memorial complex are described in detail in Section 5.0 of the traffic impact analysis.

The study analyzes 2015 Existing, 2020 Background, and 2020 Build-out traffic operations with the new development. Analysis is provided for the three existing signalized intersections on Jefferson Street at Reserve Avenue, McClanahan Street, and Flannagan Drive and for both a single lane and multilane access at the proposed development site. The study analyzes level of service and delays, vehicle queue lengths, potential improvements to the Jefferson street typical

section, and pedestrian accommodations. Overall, level of service and delays are acceptable for all study scenarios within the public right-of-way at the signalized intersections studied and at the proposed entrance on Jefferson Street.

After analysis of the study network as described above, the following recommendations are offered:

1. Provide separate left and right turn lanes for vehicles exiting the proposed development to Jefferson Street.
2. Provide a full access entrance from Jefferson Street. Provide secondary access to the Jefferson Street/Flannagan Drive intersection traffic signal.
3. Eliminate on-street parking on northbound Jefferson Street.
4. Provide a mid-block crosswalk with pedestrian raised refuge island at the Jefferson Street site entrance.
5. Provide a separate left turn lane from southbound Jefferson Street into the site entrance.
6. Remark southbound Jefferson Street at Flannagan/Weller intersection: one right turn lane, one through lane, and one left turn lane.
7. Remark northbound Jefferson Street at Flannagan/Weller intersection: one left turn lane (40' storage and 50' taper) and one through/right lane.
8. Modify Jefferson Street typical section adjacent to Carilion property such that Jefferson Street is four lanes wide (two southbound through, one southbound left/one northbound left, and one northbound through/right).
9. Coordinate study network signalized intersection upon implementation of the proposed development.

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Appendix B – Turning Movement Counts

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Appendix E – Conceptual Jefferson Street Layout

Appendix F – Left and Right Turn Lane Warrants (VDOT Road Design Manual)

## 1.0 Introduction

Mattern & Craig, Inc. was commissioned by Carilion Clinic to perform a Traffic Impact Analysis for a proposed medical facility in the City of Roanoke, Virginia. The medical facility is scheduled to be constructed and fully occupied by 2020. **Figure 1.1** depicts the location of the proposed development and the surrounding area.

This report includes discussion of existing and projected traffic volumes in the study area, trips anticipated to be generated by the proposed medical building, level of service analyses, queuing analyses, turn lane warrant analysis, and identification of warranted geometric improvements.

This study will analyze two weekday peak hour periods: AM and PM.

## 2.0 Proposed Development

The proposed development is a 15 story building with parking in the five lower levels and medical facilities in upper ten levels located on a portion of Parcel 4060502. The parking is proposed to include 800 spaces and the medical facility is proposed to encompass 500,000 square feet of medical use space. The parking will be for employees and for the general public; public parking will be free.

The primary, full-movement access location is from Jefferson Street between McClanahan Street and Weller Avenue/Flannagan Drive; a secondary access location is from Flannagan Drive.

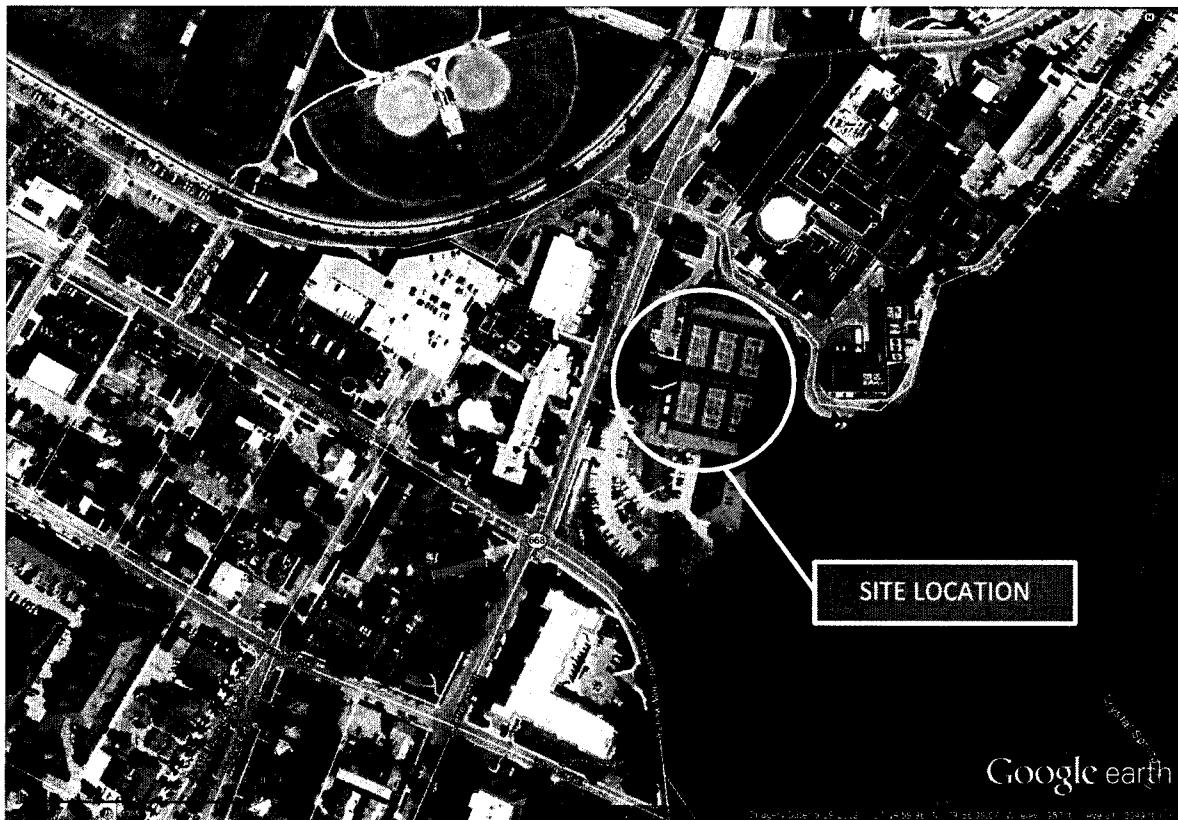
The proposed development layout is provided in **Appendix A**.

## 3.0 2015 Existing Conditions

Three-hour AM (6:00 – 9:00 AM) and PM (3:00 – 6:00 PM) classification turning movement counts were collected on Tuesday, February 3, 2015 by The Traffic Group, a sub-consultant to Mattern & Craig. Turning movement classification counts included pedestrians and bicycles. The counts were performed at the signalized intersections of Jefferson Street and McClanahan Street/Yellow Mountain Road and Jefferson Street and Weller Avenue/Flannagan Drive; and at the unsignalized intersection of Evans Mill Road and Weller Avenue. The traffic volumes include the existing percentage of heavy vehicles trucks, buses and ambulances, within the study network. Recorded vehicular traffic volumes, percent heavy vehicles, and conflicting pedestrians are included in the Synchro models. The existing traffic counts are included in **Appendix B**.

The AM and PM peak hours of Jefferson Street, as indicated by the turning movement counts, are 7:30 – 8:30 AM and 4:45 – 5:45 PM, respectively.

**Figure 1.1**  
Site Specific Location Map



**Figure 1.1**  
Site Specific Location Map

Turning movement counts were collected on Wednesday, May 30, 2012 at the signalized intersection of Jefferson Street and Reserve Avenue for the Roanoke River District traffic study, performed by Balzer and Associates, Inc. It was mutually agreed between Mattern & Craig and the City of Roanoke that a 1.0% annual growth rate be applied to the existing traffic counts to current year 2015. The 2015 traffic volumes at the Reserve Avenue intersection were then balanced with the recorded traffic counts at the intersection of Jefferson Street and Weller Avenue/Flannagan Drive. The existing traffic counts are included in **Appendix B**.

Existing AM and PM peak hour volumes on the street network are presented in **Figure 3.1**.

These volumes were used to quantify the existing traffic within the network and to determine the directional distribution of existing peak hour traffic. The directional distributions for the AM and PM peak hours along Jefferson Street are delineated in **Table 3.1**.

**Table 3.1 – Directional Distribution on Jefferson Street**

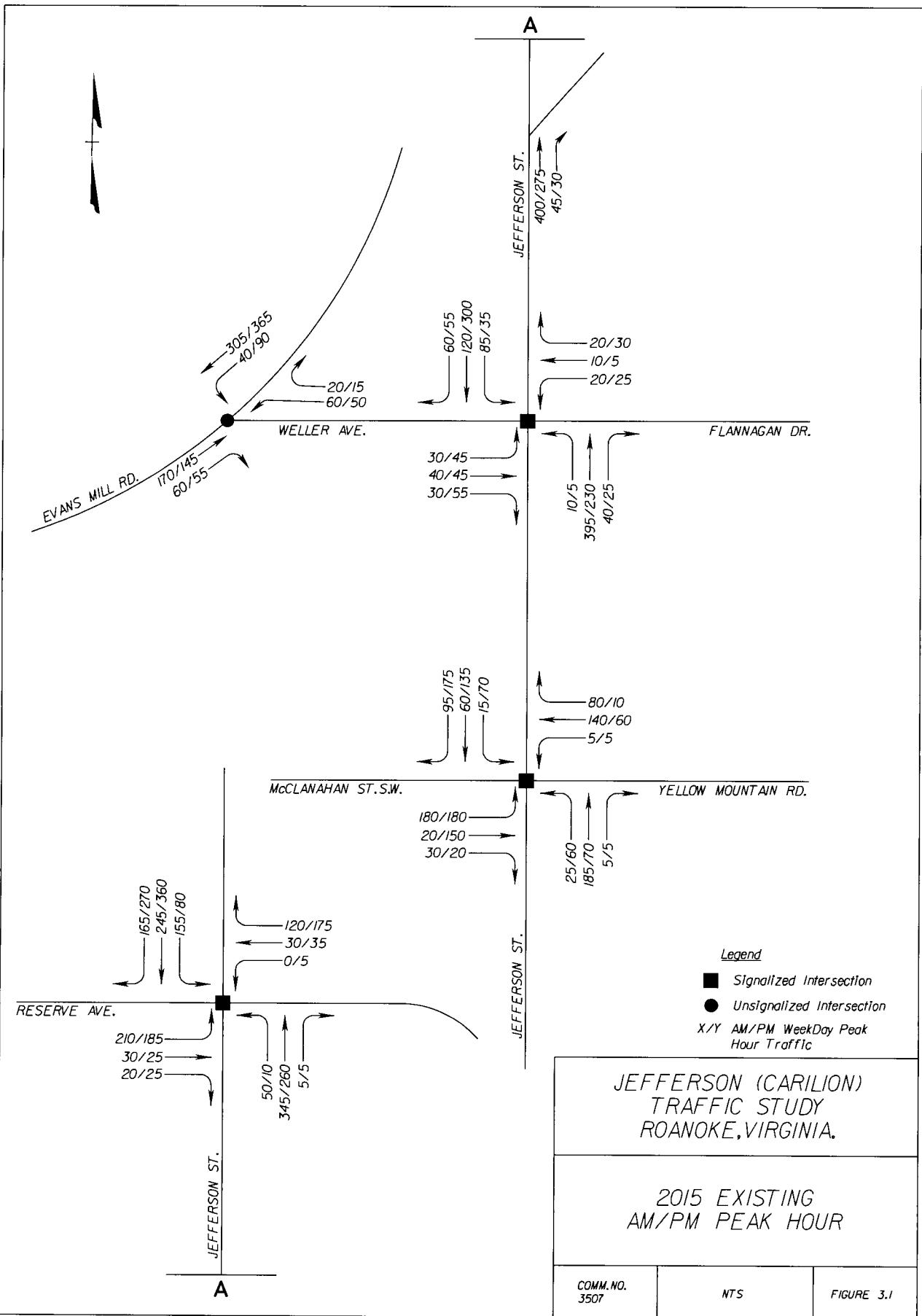
Peak Hour	Northbound Percentage	Southbound Percentage
AM	70%	30%
PM	40%	60%

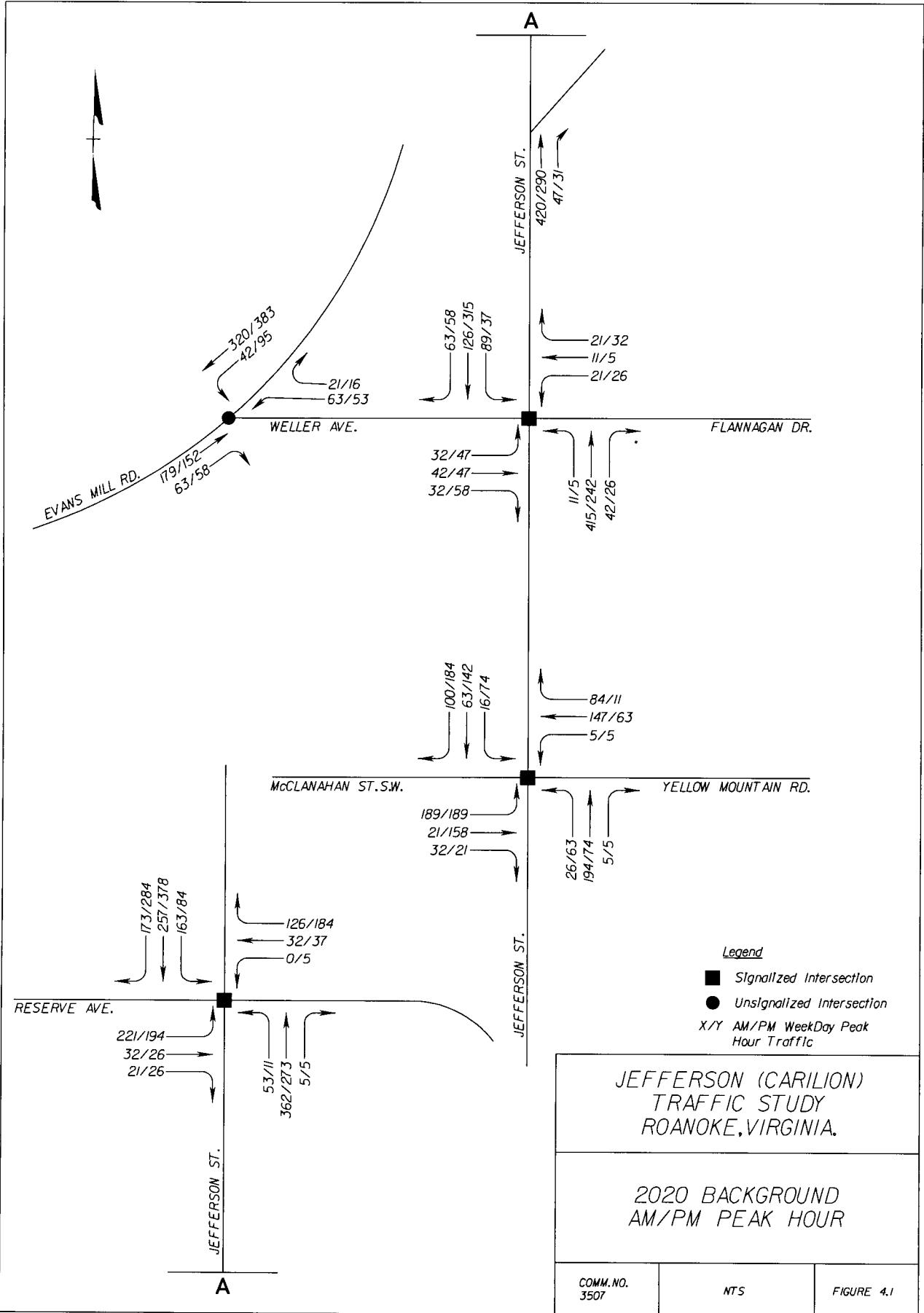
#### **4.0 Background Traffic Volumes**

Background traffic is that which would be anticipated to be utilizing the existing street network when the proposed development is expected to be completed, but without the traffic volume from the new development.

The proposed medical facility is projected to be complete and fully operational by 2020. It was mutually agreed upon in the February 18, 2015 Pre-Scoping meeting with City of Roanoke that an annual growth rate of 1.0% be utilized between 2015 and 2020. The existing, balanced 2015 traffic counts were converted to 2020 background traffic volumes by utilizing the annual growth rate of 1.0% from year 2015.

2020 background traffic volumes are presented in **Figure 4.1** for the AM and PM peak hours.





## 5.0 Projected Development Volumes

Trip generation was performed using the Institute of Transportation Engineers (ITE) Trip Generation Manual, 9<sup>th</sup> Edition. Site trip generation was determined as agreed upon in the City of Roanoke Pre-Scoping meeting on February 18, 2015. The land use of the proposed development is described in Section 2.0 and is represented by land use code 610 – Hospital in the Manual. Based on size of the facility and the peak hour, the Manual provides an estimate of the new trips generated by the proposed development.

Trip generation and projected distributions are discussed in section 5.1 and 5.2.

### 5.1 Trip Generation

**Table 5.1** provides the number of trips generated by the proposed land use.

**Table 5.1 – Trips Generated (Land Use 610 – Hospital)**

Land Use	ITE Land Use Code	Size	AM Weekday Peak Hour of Adjacent Street		PM Weekday Peak Hour of Adjacent Street	
			Entering	Exiting	Entering	Exiting
Hospital	610	500,000 SF	314 (63%)	185 (37%)	187 (38%)	304 (62%)
TOTAL			499		491	

### 5.2 Trip Distributions

Site trip assignment and distribution on the existing street network are anticipated to be unique to the proposed development and therefore will differ from the existing traffic distributions, due to local travel patterns in the area. **Table 5.2** indicates the site trip distribution for site generated trips entering from Jefferson Street based on local travel patterns. Site generated trips exiting the development are anticipated to be distributed as described in **Table 3.1** for the AM and PM peak hours.

**Table 5.2 – Site Trip Directional Distribution Entering From Jefferson Street**

Peak Hour	Northbound Percentage	Southbound Percentage
AM	50%	50%
PM	30%	70%

During the February 18, 2015 Pre-Scoping meeting it was agreed that 80% of site generated trips will use the Jefferson Street entrance and 20% the Flannagan Drive entrance. The Flannagan Drive entrance will primarily serve medical facility employees and potentially emergency services; the Jefferson Street entrance will be the primary access for patients and the general public.

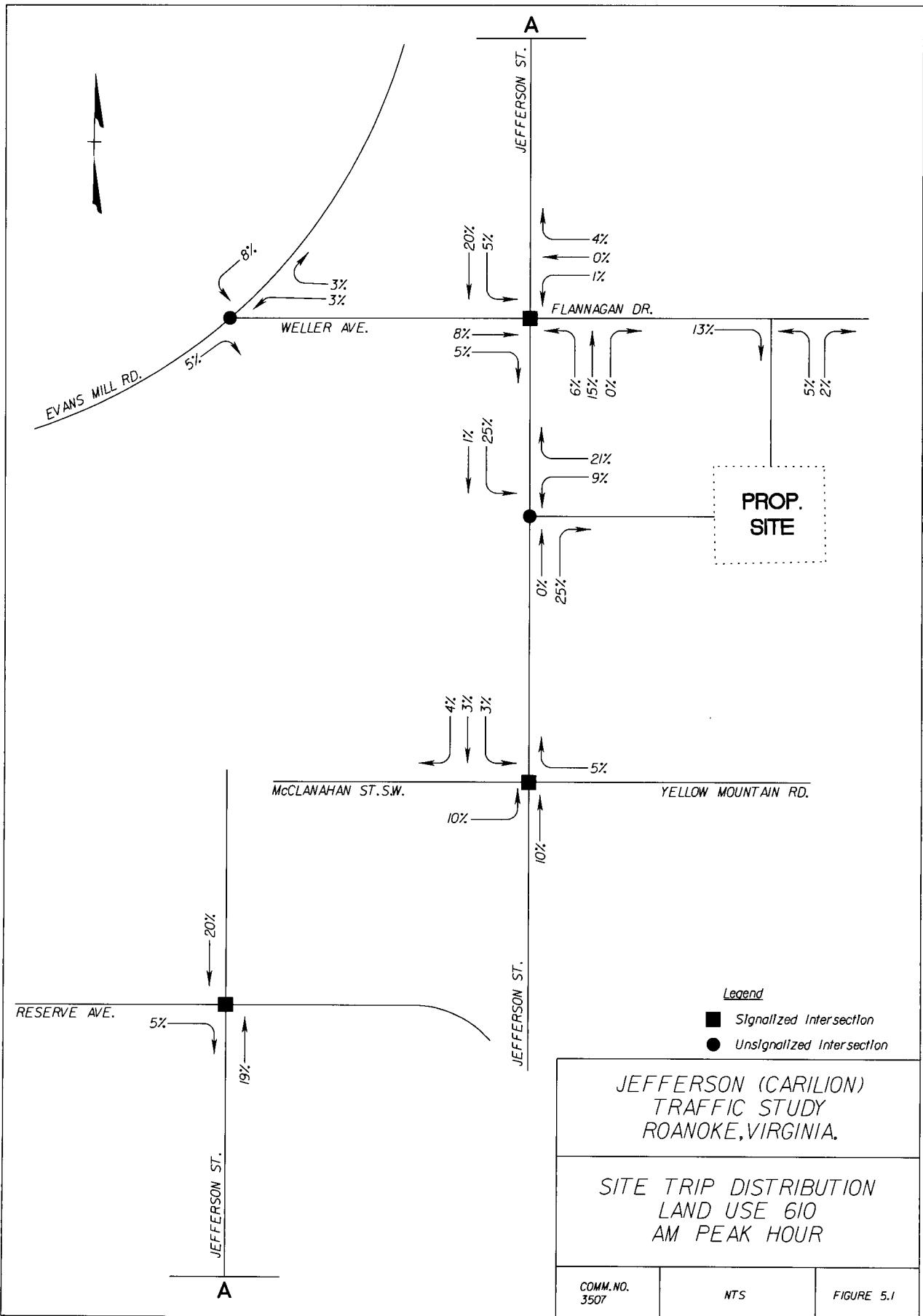
**Figure 5.1** and **Figure 5.2** provide the anticipated site trip distributions by percentage for the AM and PM peak hours, respectively.

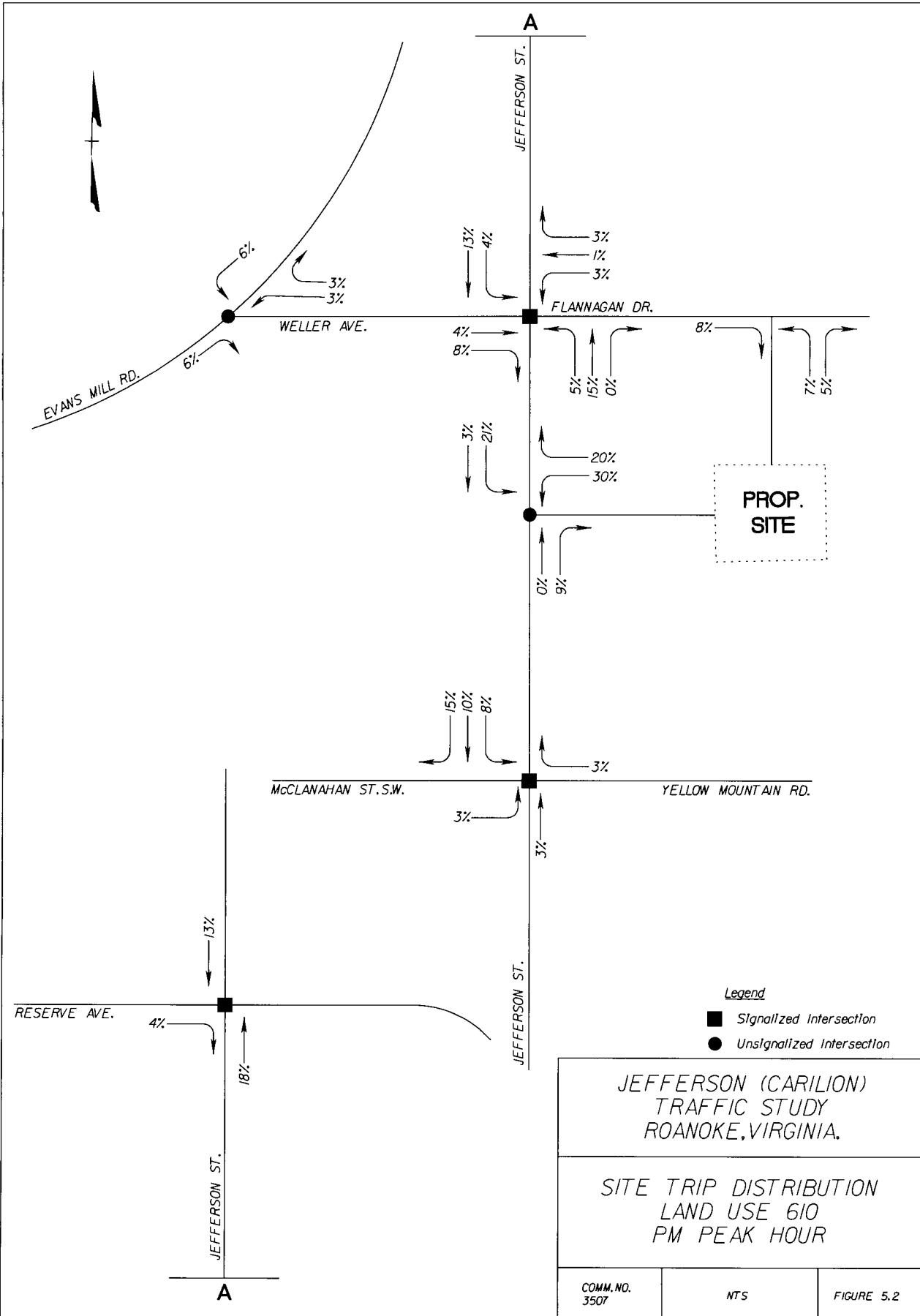
Site trip distributions are provided in **Figure 5.3** and **Figure 5.4** for the AM and PM peak hours, respectively.

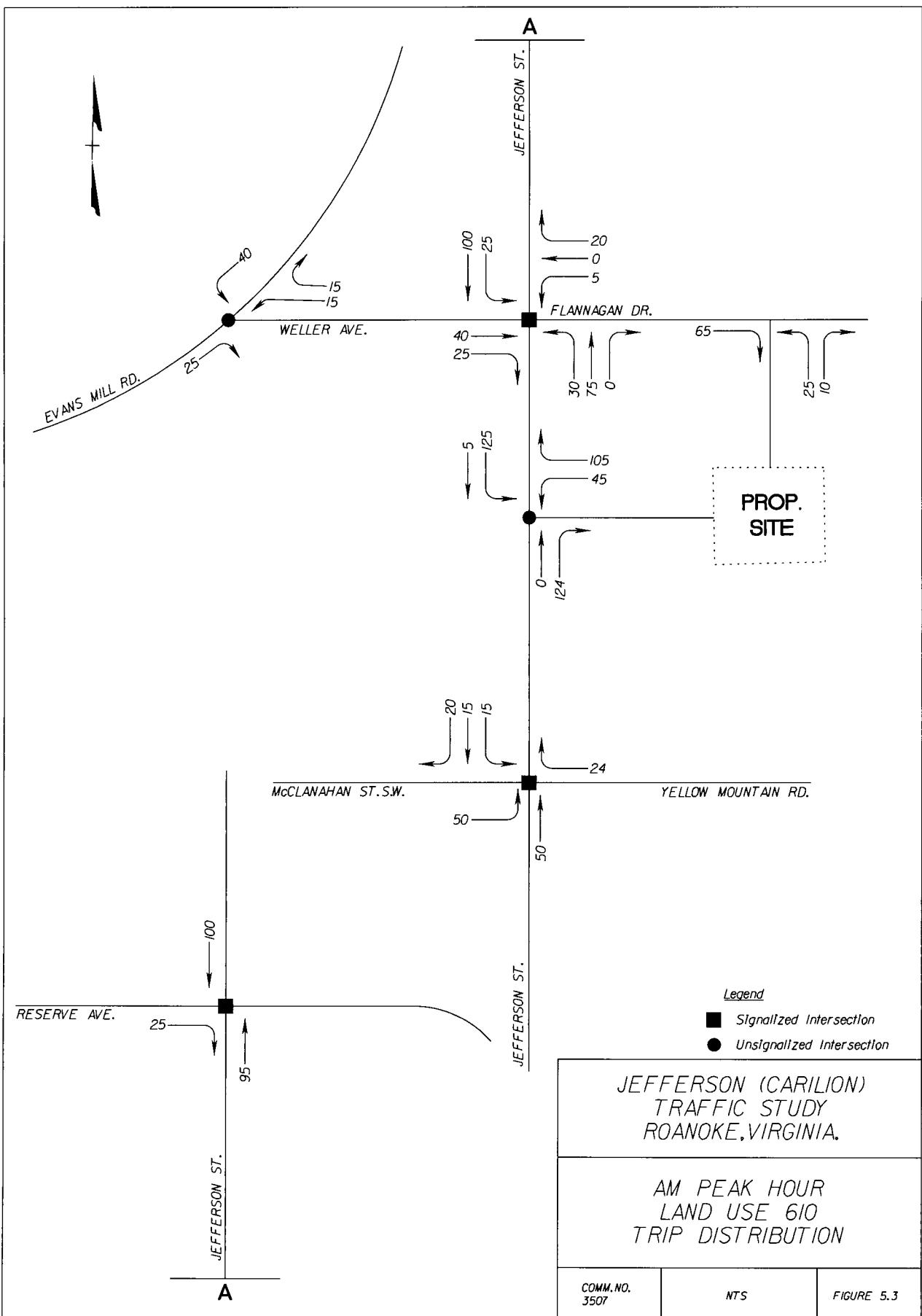
Additionally, during the February 18, 2015 Pre-Scoping meeting parking turnover at the proposed five levels of parking within the proposed development was discussed. As mentioned previously, the parking area will serve medical facility employees, emergency services, patients, and the general public. Some of the parking spaces will turnover more frequently than others due to the nature of the visits generated by the medical facility. At the Pre-Scoping meeting, it was mutually agreed that 300 of the 800 available parking spaces can be expected to turnover three times per 12-hour period (6AM – 6PM). This logic results in 900 vehicle turnovers at the parking structure over the 12-hour period and 75 turnovers per hour evenly distributed. The entering and exiting of these movements are all assumed to occur at the Jefferson Street entrance. The 75 entering and 75 exiting trips are distributed to and from the site based on the same logic described for the site generated trips. Parking turnover trip distributions are provided in **Figure 5.5** and **Figure 5.6** for the AM and PM peak hours, respectively.

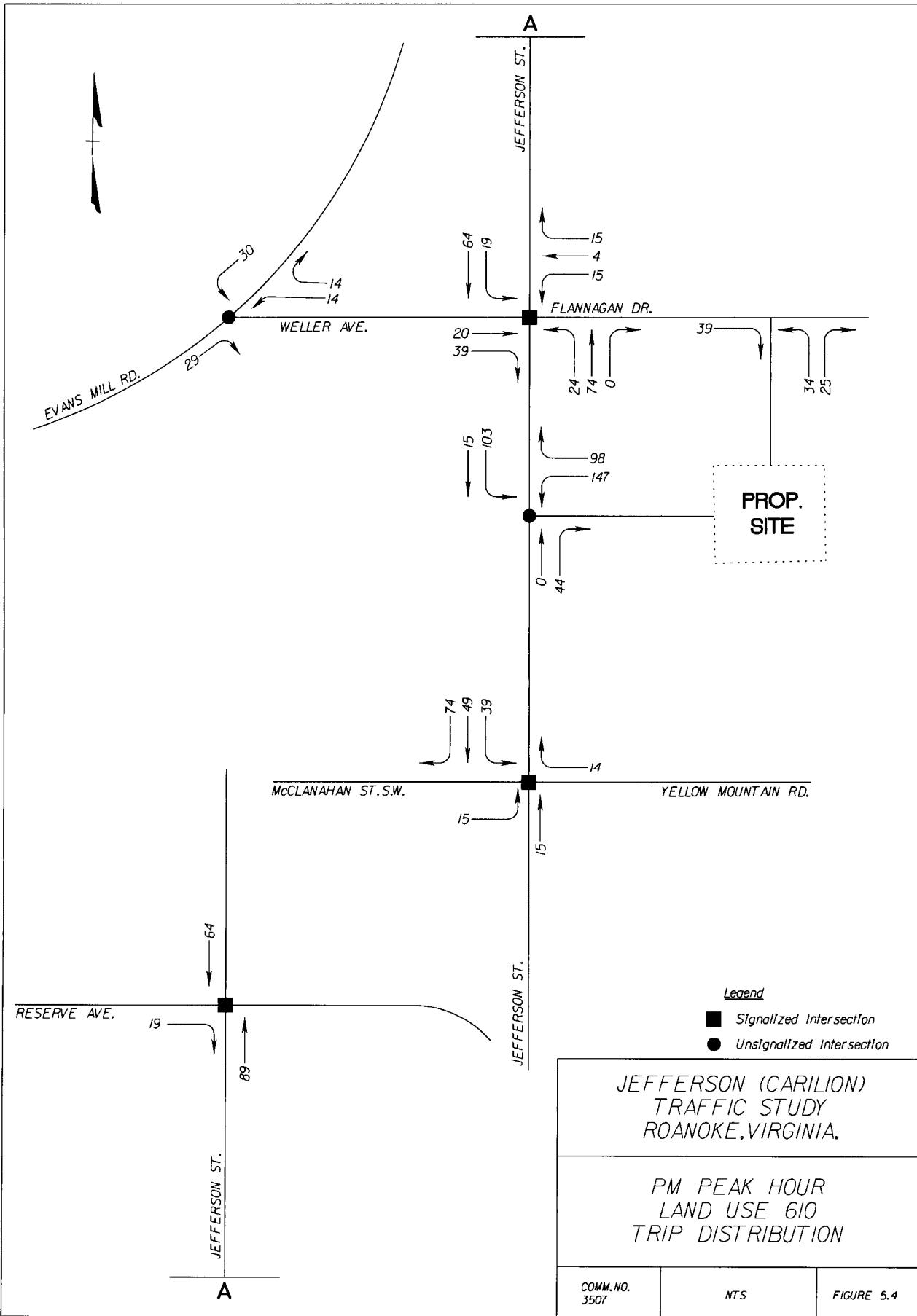
It is anticipated that a portion of the existing traffic utilizing the existing parking garages on Reserve Avenue and Bellevue Avenue will utilize the proposed parking structure in future years. For this study, it is assumed that 60% of the Jefferson Street southbound left traffic volume at the Reserve Avenue intersection will be re-routed to the proposed parking structure via southbound Jefferson Street. This volume reallocation and projected distribution is presented in **Figure 5.7** and **Figure 5.8** for the AM and PM peak hours, respectively.

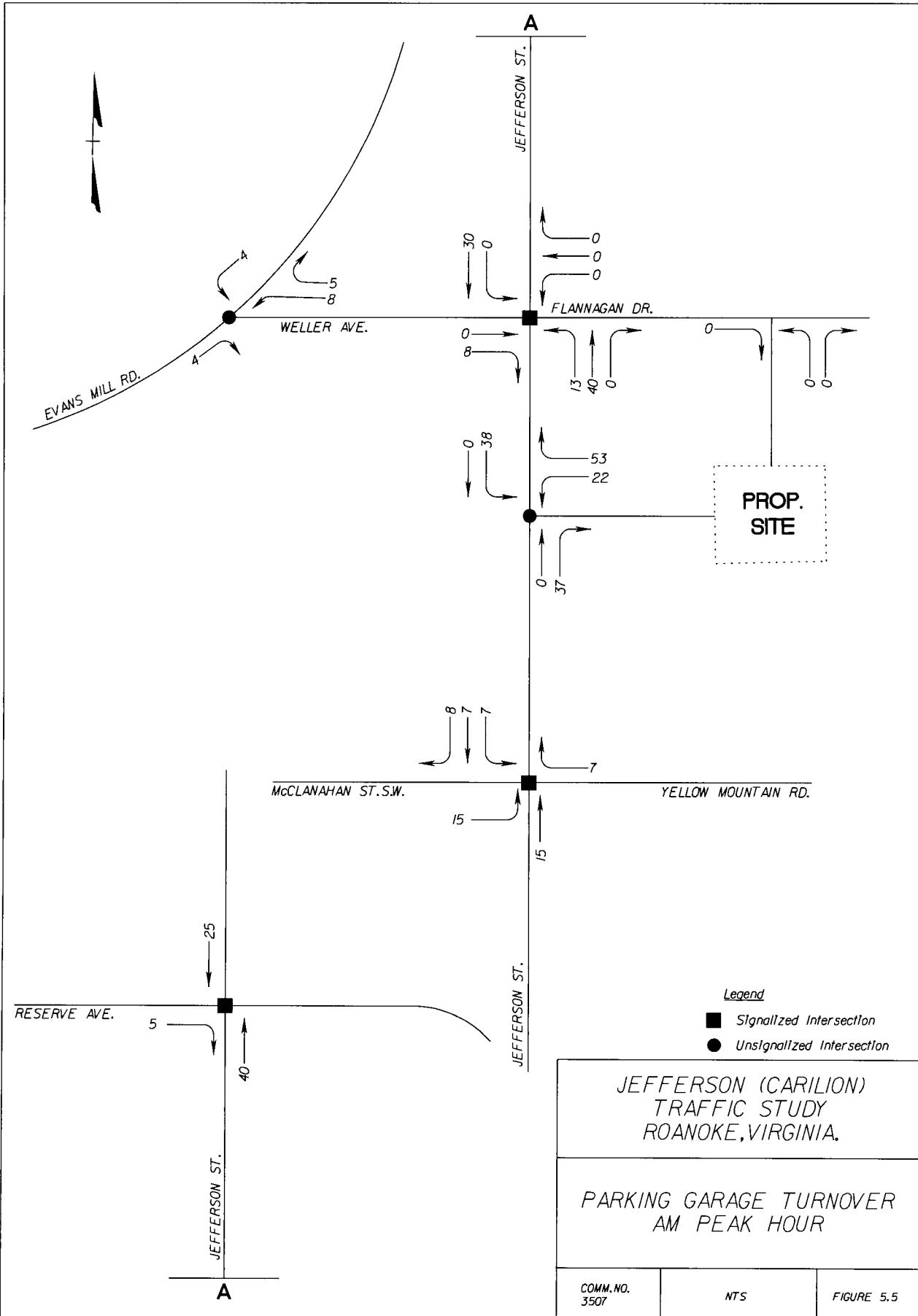
It is anticipated that pedestrians accessing their vehicles parked in the lower levels of the medical facility will be going to and leaving from other facilities within the Roanoke Memorial campus. This project proposes a mid-block crosswalk with a pedestrian raised refuge island located just south of the proposed site entrance on Jefferson Street. Therefore, for the 2020 Build-Out conditions, pedestrians are conservatively estimated to cross Jefferson Street at a rate of 50 pedestrians per hour in both the AM and PM peak hours. Further, 20 pedestrians per hour are estimated to cross the proposed site entrance in both the AM and PM peak hours.

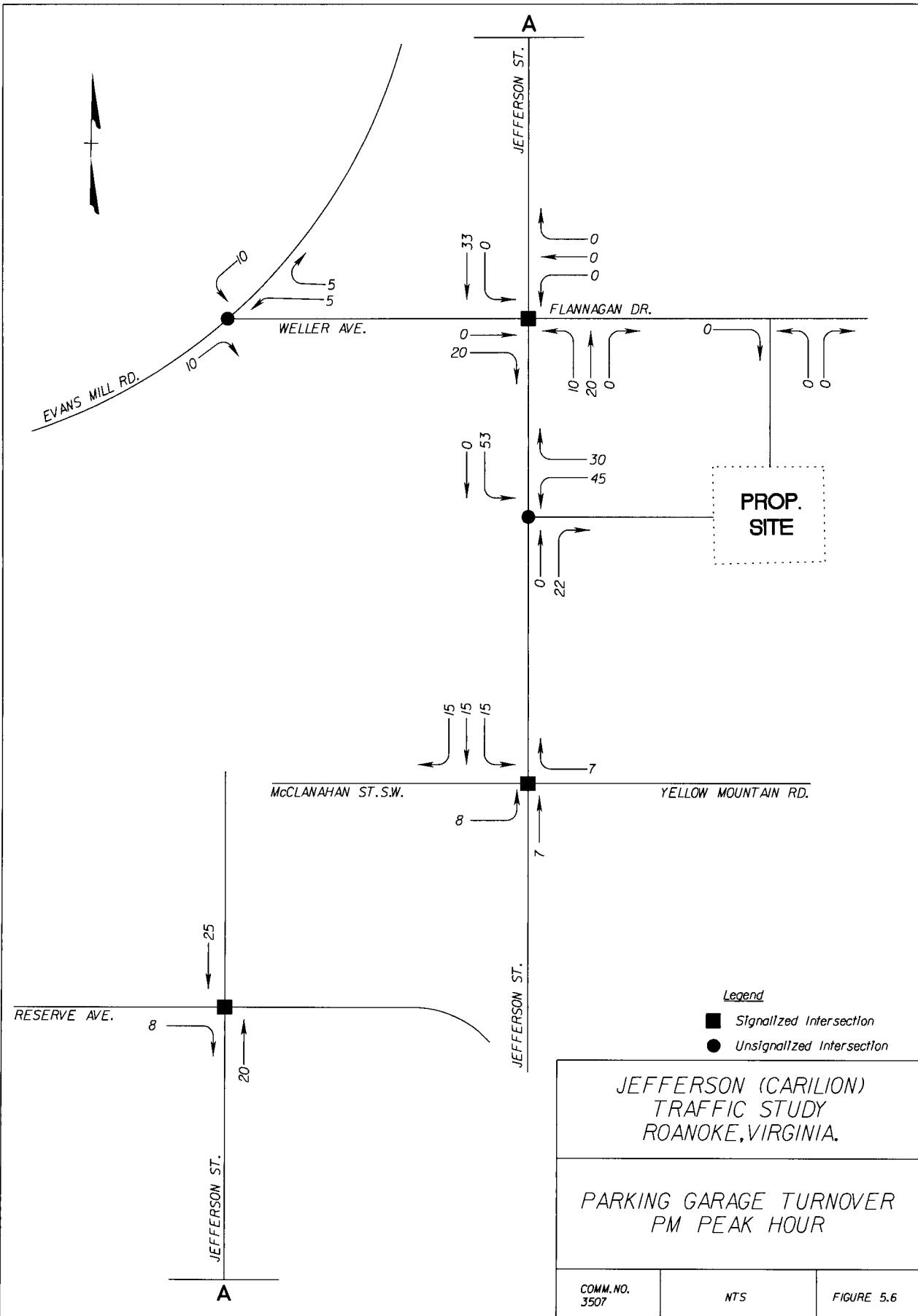


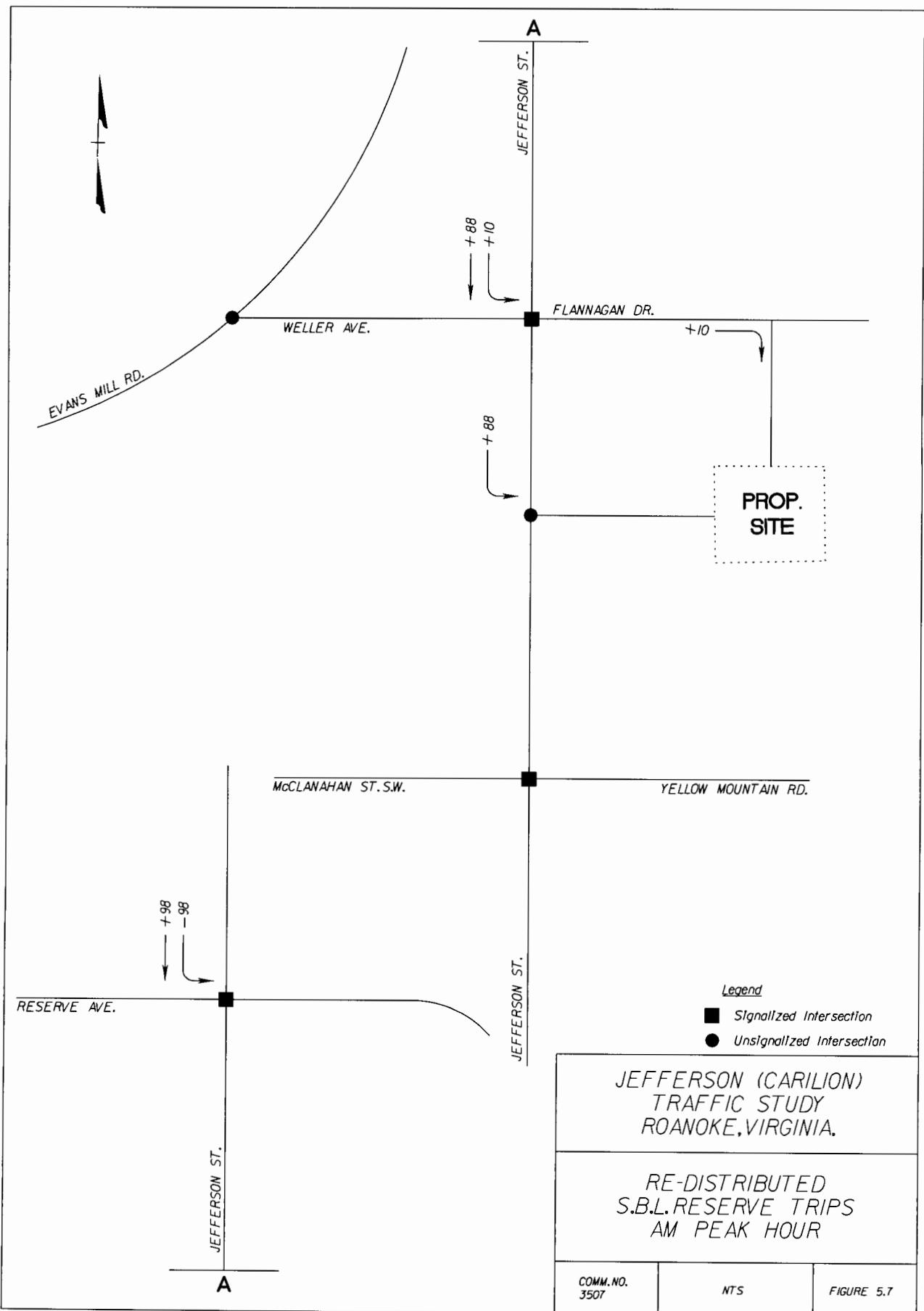


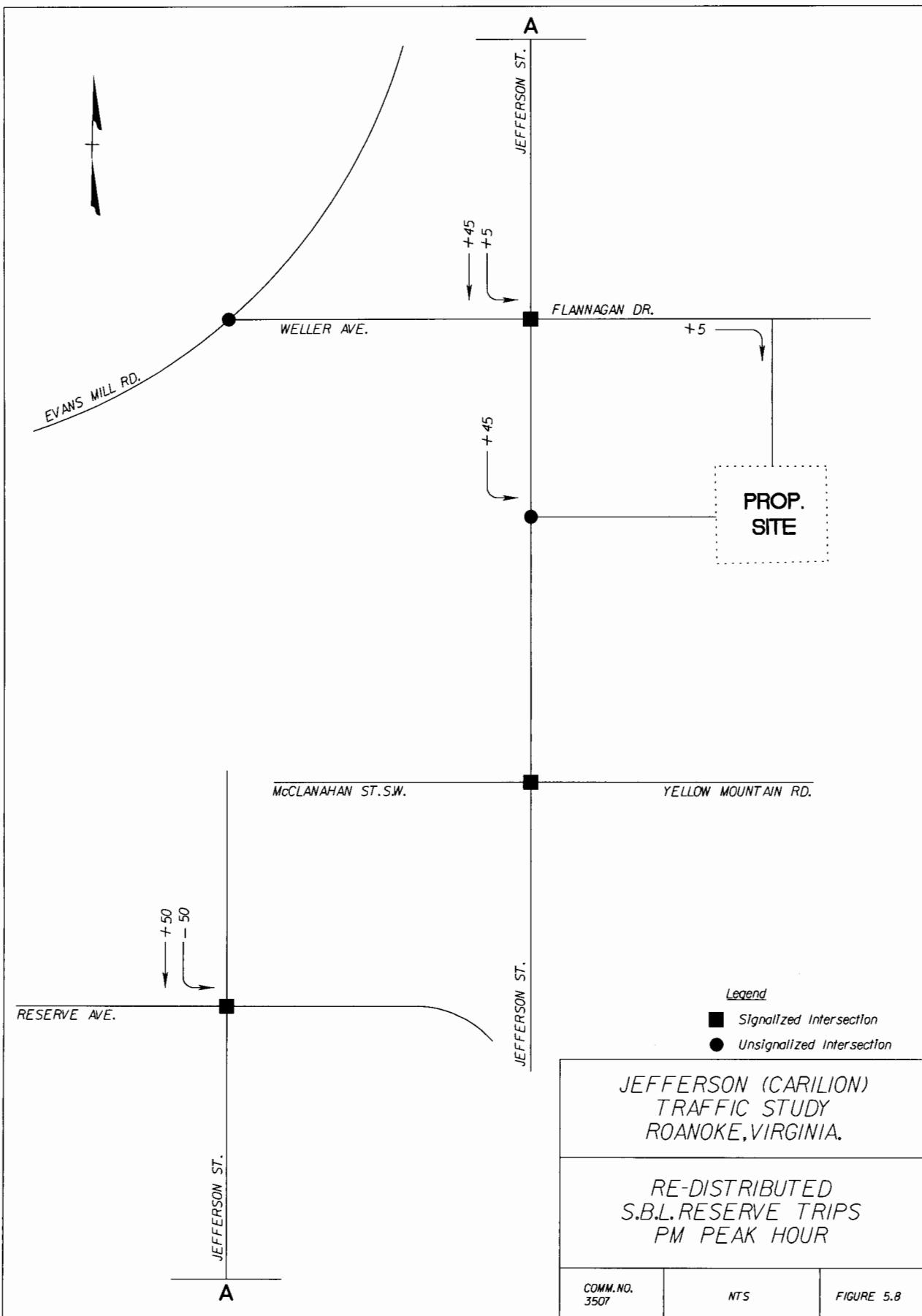












## 6.0 2020 Build-Out Volumes

The 2020 Build-Out volumes for the AM and PM peak hours are determined by summing the 2020 Background projected traffic volumes (**Figure 4.1**), site generated trips (**Figure 5.3** and **Figure 5.4**), the parking turnover trips (**Figure 5.5** and **Figure 5.6**), and the projected existing parking structure trip reallocation (**Figure 5.7** and **Figure 5.8**).

The resulting 2020 Build-Out volumes are presented in **Figure 6.1** for the AM and PM peak hours, respectively.

## 7.0 Turn Lane Warrant Analysis

On high volume roads, vehicles slowing or stopping to turn create a hazard for other vehicles. This hazard increases as the number of turning vehicles increases. The VDOT Road Design Manual provides guidelines for turn lanes on two-lane roads. These guidelines are based on the design speed, turning volume, approach volume, and opposing volume.

### 7.1 Right Turn Treatment

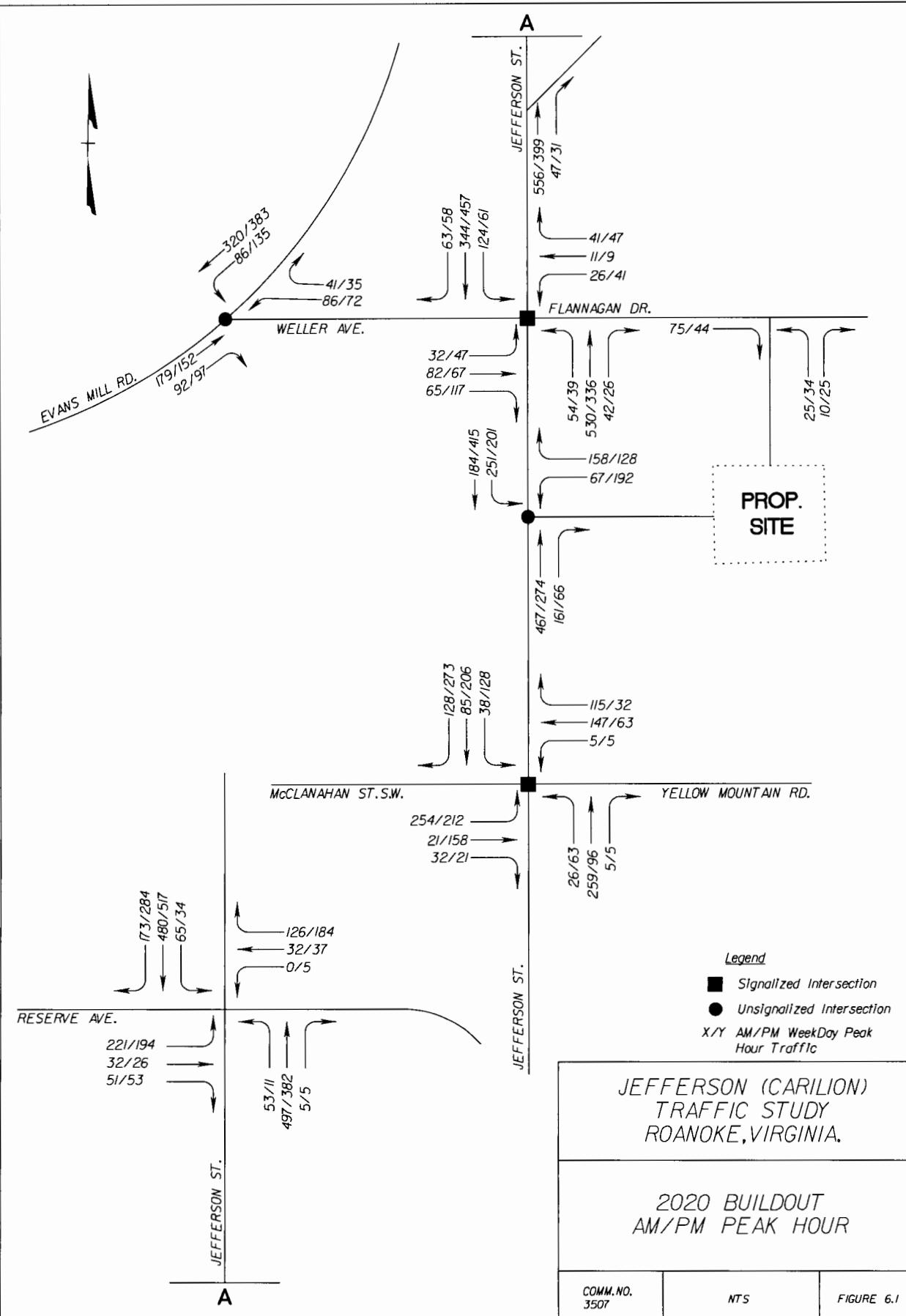
Figure 3-26 of Appendix F of the VDOT Road Design Manual (See **Appendix F**) was used to determine the required right turn treatments at the northbound approach to the proposed site entrance on Jefferson Street. The projected site traffic warrants a full width right turn lane and taper in the AM peak hour and warrants a taper in the PM peak hour.

Although a right turn lane is warranted, the City of Roanoke desires to encourage pedestrian accommodations and promote pedestrian safety by means of traffic calming through this section of Jefferson Street. Therefore, the right turn lane, warranted by projected vehicular traffic volume, will not be included in the analysis or recommendations in this study.

### 7.2 Left Turn Treatment

Table 3-1 (page F-53) of Appendix F of the VDOT Road Design Manual (See **Appendix F**) was used to determine if a left turn lane is warranted at the southbound approach to the proposed site entrance on Jefferson Street. The projected site traffic warrants a left turn lane in the AM and PM peak hour.

The proposed development will require a separate left turn lane at the site entrance. Further, the development requires reallocation of lane usage on Jefferson Street to provide an exclusive northbound left turn lane and an exclusive southbound left turn lane at the signalized intersection of Jefferson Street and Weller Avenue/Flannagan Drive. The southbound left turn lane replaces



an existing shared through/left lane. All lane allocation revisions can be made by changing the pavement markings, with the exception of a short section of street at the new entrance.

See **Appendix E** for a preliminary layout of Jefferson Street.

## 8.0 Level of Service Analysis

Synchro traffic software was used to analyze the operational conditions for the study area for all study scenarios.

Synchro reports operational Level of Service (LOS) at an intersection with a letter designation and with an average delay time in seconds for vehicles stopped at the intersection. Level of service is a quantitative measure of driver perception of delay (waiting time) experienced at an intersection, and LOS is based on the delay thresholds specified in the Highway Capacity Manual (HCM). LOS conditions range from "A" (little delay) to "F" (very long delay). **Table 8.1** reflects the delay ranges in seconds drivers may experience for a corresponding level of service for both signalized and unsignalized intersections. The criteria used to measure LOS for signalized intersections are different from the criteria used for unsignalized intersections. LOS for signalized intersections is based on control delay per vehicle. Control delay, as defined by HCM, includes initial deceleration delay, queue move-up time, stopped delay and final acceleration delay. According to this definition the minimum design acceptable delay is "D" for design purposes, particularly in a more developed area. For signalized intersections, LOS F indicates that more than one signal change cycle may be required for a driver to pass through the intersection. For unsignalized intersections, levels of service are based on critical gap, the minimum time interval in the major street traffic stream that allows entry for one minor street vehicle from an intersection, particularly critical being the left turn vehicles. Level of service "E" is generally considered to be the minimum design standard. At an unsignalized intersection, LOS F occurs when there are not enough minimum gaps to allow the movements on the minor street to enter the major street in a "reasonable" amount of time.

**Table 8.1 – Level of Service and Delay**

<u>Unsignalized Intersection</u>		<u>Signalized Intersection</u>	
Level of Service	Average Control Delay per Vehicle (Seconds)	Level of Service	Average Control Delay per Vehicle (Seconds)
A	0-10	A	0-10
B	10-15	B	10-20
C	15-25	C	20-35
D	25-35	D	35-55
E	35-50	E	55-80
F	>50	F	>80

Synchro traffic software was used to analyze all signalized and unsignalized intersections in this report. SimTraffic simulation software was used in conjunction with Synchro to further analyze vehicle queuing results. The procedures used by Synchro and SimTraffic are in accordance with the methodologies stated in the Highway Capacity Manual (HCM) for intersection analysis. SimTraffic analysis results are summarized in Section 9.0.

Analysis results for signalized intersections provide level of service calculations for all approaches as well as an overall intersection level of service. Please note that analysis results for unsignalized intersections do not provide level of service results for all approaches or an overall intersection level of service, but rather a level of service for movements and/or approaches that have a conflicting movement. In this study, level of service is the basis for the evaluation of existing and background traffic conditions and the impacts of the traffic generated by the proposed site on the existing roadway network.

Two alternates for design of the parking garage exit were analyzed for this study; a one lane exit and a two lane exit with separate left and right turn lanes. Additionally, a scenario with warranted modifications to Jefferson Street and a two lane exit with separate left and right turn lanes were analyzed. The buildup scenarios were analyzed as a coordinated system between the three existing signalized intersections.

LOS and delay are summarized for the 2015 Existing, 2020 Background, 2020 Build-out (Single Lane Site Exit), 2020 Build-out (Two Lane Site Exit), and 2020 Build-out (Two Lane Site Exit and Modified Jefferson Street) study network scenarios per intersection (see **Table 8.2**).

See **Appendix C** for detailed Synchro HCM LOS Reports.

Table 8.2

Intersection	Scenario	Overall LOS	Level of Service per Movement by Approach (Delay In sec/veh)													
			Eastbound			Westbound			Northbound			Southbound				
			LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
Signalized Jefferson St. & McClanahan St./Yellow Mountain Rd.	<b>AM</b>															
	2015 Existing AM	B (12.4)	B (15.0)			B (10.1)			A (9.7)			B (13.0)				
			B (15.0)			A (9.9)			B (13.0)			B (11.2)				
	2020 Background AM	B (12.8)	B (15.3)			A (10.0)			A (9.6)			B (13.7)				
			B (15.3)			A (9.8)			B (13.7)			B (11.8)				
	2020 Buildout (Single Ln) AM	B (18.3)	C (27.7)			B (13.7)			B (13.6)			C (20.2)				
			C (27.7)			B (13.6)			C (20.2)			A (9.4)				
	2020 Buildout (Double Ln) AM	B (18.3)	C (27.7)			B (13.7)			B (13.6)			C (20.2)				
			C (27.7)			B (13.6)			C (20.2)			A (9.4)				
	2020 Buildout (Double Ln & Modified Jefferson St) AM	B (18.3)	C (27.7)			B (13.7)			B (13.6)			C (20.2)				
			C (27.7)			B (13.6)			C (20.2)			A (9.4)				
	<b>PM</b>															
	2015 Existing PM	B (12.6)	B (13.5)			A (9.0)			A (8.7)			B (12.4)				
			B (13.5)			A (9.0)			B (12.4)			B (12.4)				
	2020 Background PM	B (13.3)	B (14.1)			A (9.2)			A (8.8)			B (13.3)				
			B (14.1)			A (9.1)			B (13.3)			B (13.3)				
	2020 Buildout (Single Ln) PM	B (17.3)	C (31.6)			B (15.6)			B (15.3)			B (16.8)				
			C (31.6)			B (15.5)			B (16.8)			A (8.5)				
	2020 Buildout (Double Ln) PM	B (17.3)	C (31.6)			B (15.6)			B (15.3)			B (16.8)				
			C (31.6)			B (15.5)			B (16.8)			A (8.5)				
	2020 Buildout (Double Ln & Modified Jefferson St) PM	B (17.3)	C (31.6)			B (15.6)			B (15.3)			B (16.8)				
			C (31.6)			B (15.5)			B (16.8)			A (8.5)				

Table 8.2 (cont.)

Intersection	Scenario	Overall LOS	Level of Service per Movement by Approach (Delay in sec/veh)																		
			Eastbound			Westbound			Northbound			Southbound									
			LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT							
<b>AM</b>																					
2015 Existing AM	A (9.1)	B (16.7)	B (15.9)		B (14.9)	B (14.8)		A (8.8)	A (6.3)			A (5.9)	A (5.4)								
		B (16.1)			B (14.9)			A (8.8)			A (5.9)										
2020 Background AM	A (9.5)	B (17.7)	B (16.7)		B (15.6)	B (15.5)		A (9.2)	A (6.6)			A (5.9)	A (5.5)								
		B (17.0)			B (15.6)			A (9.2)			A (6.0)										
2020 Buildout (Single Ln) AM	A (9.3)	C (32.8)	C (28.7)		C (27.7)	C (25.2)		A (2.7)	A (8.1)			A (7.8)	A (6.1)								
		C (29.5)			C (26.4)			A (2.7)			A (7.7)										
2020 Buildout (Double Ln) AM	A (9.3)	C (32.8)	C (28.7)		C (27.7)	C (25.2)		A (2.7)	A (8.1)			A (7.8)	A (6.1)								
		C (29.5)			C (26.4)			A (2.7)			A (7.7)										
2020 Buildout (Double Ln & Modified Jefferson St) AM	A (6.4)	C (32.8)	C (28.7)		C (27.7)	C (25.2)		A (0.4)	A (2.3)		A (0.9)	A (0.8)		A (0.1)							
		C (29.5)			C (26.4)			A (2.1)			A (0.8)										
<b>PM</b>																					
2015 Existing PM	A (8.3)	B (14.6)	B (13.5)		B (12.6)	B (12.2)		A (7.3)	A (6.4)			A (6.6)	A (5.7)								
		B (13.8)			B (12.4)			A (7.3)			A (6.3)										
2020 Background PM	A (8.6)	B (15.2)	B (13.9)		B (13.1)	B (12.6)		A (7.5)	A (6.5)			A (6.8)	A (5.8)								
		B (14.3)			B (12.8)			A (7.5)			A (6.5)										
2020 Buildout (Single Ln) PM	B (15.5)	C (34.9)	C (28.0)		C (30.2)	C (24.0)		A (1.2)	B (18.1)			B (18.6)	B (14.0)								
		C (29.4)			C (27.2)			A (1.2)			B (17.9)										
2020 Buildout (Double Ln) AM	B (15.5)	C (34.9)	C (28.0)		C (30.2)	C (24.0)		A (1.2)	B (18.1)			B (18.6)	B (14.0)								
		C (29.4)			C (27.2)			A (1.2)			B (17.9)										
2020 Buildout (Double Ln & Modified Jefferson St) PM	B (16.8)	D (35.2)	C (28.2)		C (30.5)	C (24.2)		A (5.4)	A (1.1)		B (14.8)	C (22.2)		C (13.9)							
		C (29.7)			C (27.4)			A (1.5)			C (20.5)										

Table 8.2 (cont.)

Intersection	Scenario	Overall LOS	Level of Service per Movement by Approach (Delay In sec/veh)											
			Eastbound			Westbound			Northbound			Southbound		
			LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
<b>AM</b>														
Unsignalized Evans Mill Rd. & Weller Ave.	2015 Existing AM	-	-	-	B (13.6)	-	A (9.1)	-	-	-	-	A (7.9)	-	-
			-	-	B (12.5)			-			-			
	2020 Background AM	-	-	-	B (14.0)	-	A (9.2)	-	-	-	-	A (8.0)	-	-
			-	-	B (12.8)			-			-			
	2020 Buildout (Single Ln) AM	-	-	-	C (17.7)	-	A (9.4)	-	-	-	-	A (8.2)	-	-
			-	-	C (15.0)			-			-			
	2020 Buildout (Double Ln) AM	-	-	-	C (17.7)	-	A (9.4)	-	-	-	-	A (8.2)	-	-
			-	-	C (15.0)			-			-			
	2020 Buildout (Double Ln & Modified Jefferson St) AM	-	-	-	C (17.7)	-	A (9.4)	-	-	-	-	A (8.2)	-	-
			-	-	C (15.0)			-			-			
<b>PM</b>														
Unsignalized Evans Mill Rd. & Weller Ave.	2015 Existing PM	-	-	-	C (15.4)	-	A (9.0)	-	-	-	-	A (7.9)	-	-
			-	-	B (13.9)			-			-			
	2020 Background PM	-	-	-	C (16.1)	-	A (9.0)	-	-	-	-	A (7.9)	-	-
			-	-	B (14.5)			-			-			
	2020 Buildout (Single Ln) PM	-	-	-	C (20.6)	-	A (9.2)	-	-	-	-	A (8.2)	-	-
			-	-	C (16.9)			-			-			
	2020 Buildout (Double Ln) PM	-	-	-	C (20.6)	-	A (9.2)	-	-	-	-	A (8.2)	-	-
			-	-	C (16.9)			-			-			
	2020 Buildout (Double Ln & Modified Jefferson St) PM	-	-	-	C (20.6)	-	A (9.2)	-	-	-	-	A (8.2)	-	-
			-	-	C (16.9)			-			-			

Table 8.2 (cont.)

Intersection	Scenario	Overall LOS	Level of Service per Movement by Approach (Delay In sec/veh)											
			Eastbound			Westbound			Northbound			Southbound		
			LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
<b>AM</b>														
2015 Existing AM	C (28.3)	E (67.6)	C (24.0)	-	C (29.3)	A (9.7)	C (21.2)	B (14.2)	B (17.4)	-				
		E (59.2)		C (29.3)			B (19.8)			B (16.2)				
2020 Background AM	C (30.7)	E (80.0)	C (24.1)	-	C (29.7)	A (9.8)	C (21.7)	B (14.6)	B (17.5)	-				
		E (69.1)		C (29.7)			B (20.2)			B (16.4)				
2020 Buildout (Single Ln) AM	C (27.3)	E (80.0)	C (25.2)	-	C (29.7)	A (9.1)	B (14.3)	B (15.4)	B (19.9)	-				
		E (65.1)		C (29.7)			B (13.8)			B (19.3)				
2020 Buildout (Double Ln) AM	C (27.3)	E (80.0)	C (25.2)	-	C (29.7)	A (9.1)	B (14.3)	B (15.4)	B (19.9)	-				
		E (65.1)		C (29.7)			B (13.8)			B (19.3)				
2020 Buildout (Double Ln & MOD Jefferson) AM	C (27.3)	E (80.0)	C (25.2)	-	C (29.7)	A (9.1)	B (14.4)	B (15.4)	B (19.9)	-				
		E (65.1)		C (29.7)			B (13.9)			B (19.3)				
<b>PM</b>														
2015 Existing PM	C (32.5)	F (95.4)	C (24.0)	C (24.3)	C (34.5)	A (8.7)	B (14.2)	B (14.7)	B (18.4)	-				
		F (80.3)		C (34.3)			B (14.0)			B (17.7)				
2020 Background PM	D (37.7)	F (126.0)	C (24.0)	C (24.3)	D (35.8)	A (8.8)	B (14.4)	B (14.8)	B (18.6)	-				
		F (104.6)		D (35.6)			B (14.2)			B (17.9)				
2020 Buildout (Single Ln) PM	C (32.3)	F (126.0)	C (25.1)	C (25.4)	D (35.8)	A (7.6)	A (3.3)	B (13.8)	C (20.3)	-				
		F (96.8)		D (35.6)			A (3.4)			B (19.9)				
2020 Buildout (Double Ln) PM	C (32.3)	F (126.0)	C (25.1)	C (25.4)	D (35.8)	A (7.6)	A (3.3)	B (13.8)	C (20.3)	-				
		F (96.8)		D (35.6)			A (3.4)			B (19.9)				
2020 Buildout (Double Ln & Modified Jefferson St) PM	C (32.3)	F (126.0)	C (25.1)	C (25.4)	D (35.8)	A (7.6)	A (3.3)	B (13.8)	C (20.3)	-				
		F (96.8)		D (35.6)			A (3.4)			B (19.9)				

Table 8.2 (cont.)

Intersection	Scenario	Overall LOS	Level of Service per Movement by Approach (Delay in sec/veh)											
			Eastbound			Westbound			Northbound			Southbound		
			LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
<b>AM</b>														
<b>Jefferson St &amp; Site Entrance</b>	2020 Buildout (Single Ln) AM	-	-	-	-	F (142.3)	-	-	-	-	-	B (11.2)	-	-
			-	-	-	F (142.3)			-	-	-	-		
	2020 Buildout (Double Ln) AM	-	-	-	-	F (102.4)	-	C (18.7)	-	-	-	B (11.2)	-	-
			-	-	-	E (43.6)			-	-	-	-		
	2020 Buildout (Double Ln & Modified Jefferson St) AM	-	-	-	-	F (89.5)	-	C (18.7)	-	-	-	B (11.1)	-	-
			-	-	-	E (39.8)			-	-	-	-		
	<b>PM</b>													
	2020 Buildout (Single Ln) PM	-	-	-	-	F (279.1)	-	-	-	-	-	A (9.0)	-	-
			-	-	-	F (279.1)			-	-	-	-		
	2020 Buildout (Double Ln) PM	-	-	-	-	F (209.5)	-	B (12.7)	-	-	-	A (9.0)	-	-
			-	-	-	F (130.8)			-	-	-	-		
	2020 Buildout (Double Ln & Modified Jefferson St) PM	-	-	-	-	F (166.6)	-	B (12.6)	-	-	-	A (9.0)	-	-
			-	-	-	F (105.0)			-	-	-	-		

## **8.1 Specific Intersection Analysis**

The following subsections discuss the data presented in **Table 8.2**.

### **8.1.1 Signalized Intersection of Jefferson Street & McClanahan Street/Yellow Mountain Road**

The signalized intersection of Jefferson Street and McClanahan Drive/Yellow Mountain Road experiences acceptable LOS for all approaches during all study scenarios and peak periods.

### **8.1.2 Signalized Intersection of Jefferson Street & Weller Avenue/Flannagan Drive**

The signalized intersection of Jefferson Street and Weller Avenue/Flannagan experiences acceptable LOS for all approaches during all study scenarios and peak periods.

### **8.1.3 Unsignalized Intersection of Evans Mill Road & Weller Avenue**

The unsignalized intersection of Evans Mill Road and Weller Avenue experiences acceptable LOS for all approaches during all study scenarios and peak periods.

### **8.1.4 Signalized Intersection of Jefferson Street and Reserve Avenue**

The signalized intersection of Jefferson Street and Reserve Avenue experiences acceptable LOS for all approaches during all study scenarios and peak periods with the exception of the eastbound left turn lane which experiences LOS E and LOS F in the AM and PM peak hours, respectively, for all study scenarios.

### **8.1.5 Unsignalized Intersection of Jefferson Street and Site Entrance**

The entrance to the proposed development along Jefferson Street experiences undesirable operations (LOS F) at the exit from the parking structure in the single exit lane scenario in the AM and PM peak hours. The LOS for the left and right turn movements entering the site from Jefferson Street is acceptable.

In the two lane exit scenario the entrance experiences LOS F in the AM and PM peak hours for the exiting left turn movement; the LOS is acceptable in the AM and PM peak hours for the exiting right turn movement. The LOS for movements entering the site from Jefferson Street is acceptable.

In the two lane exit with Modified Jefferson Street scenario the exiting left turn movement experiences LOS F in the AM and PM peak hours. The total delay reported for the exiting left turn movement is much less than the current Jefferson Street lane configuration scenario. The LOS is acceptable for the AM and PM peak hours for the exiting right turn movement. The LOS for movements entering the site from Jefferson Street is acceptable.

## **9.0 SimTraffic Queue Length Analyses**

Queue lengths associated with the 2015 Existing, 2020 Background, 2020 Build-out (Single lane site exit), 2020 Build-out (Two lane site exit), and 2020 Build-out (Two Lane site exit and Modified Jefferson Street) conditions were analyzed within the study area. The maximum queue length was determined as detailed in Section 7.6 of the VDOT *Traffic Operations Analysis Tool Guidebook*, Version 1.1.

See **Appendix D** for detailed SimTraffic Queue Reports for all intersections and movements.

**Table 9.1** provides a summary of the maximum queue length in relation to the storage length available at critical locations.

**Table 9.1 – Critical Movement Queue Length**

Scenario	Peak Hour	Intersection	Movement	Max. Queue Length (ft.)	Storage Length Available (ft.)
2015 Exist.	AM	Jefferson St & McClanahan/Yellow Mtn.	SB LT	86	615
			SB R	66	615
		Jefferson St & Weller/Flannagan	NB LTR	204	615
			NB L	177	100
		Jefferson St & Reserve Ave.	SB L	128	220
	PM	Jefferson St & McClanahan/Yellow Mtn.	SB LT	166	615
			SB R	108	615
		Jefferson St & Weller/Flannagan	NB LTR	153	615
			NB L	28	100
		Jefferson St & Reserve Ave.	SB L	81	220
2020 Background	AM	Jefferson St & McClanahan/Yellow Mtn.	SB LT	91	615
			SB R	77	615
		Jefferson St & Weller/Flannagan	NB LTR	230	615
			NB L	178	100
		Jefferson St & Reserve Ave.	SB L	129	220
	PM	Jefferson St & McClanahan/Yellow Mtn.	SB LT	182	615
			SB R	126	615
		Jefferson St & Weller/Flannagan	NB LTR	132	615
			NB L	33	100
		Jefferson St & Reserve Ave.	SB L	85	220

**Table 9.1 – Critical Movement Queue Length**

Scenario	Peak Hour	Intersection	Movement	Max. Queue Length (ft.)	Storage Length Available (ft.)	
2020 Buildout (Single Exit Ln)	AM	Jefferson St & McClanahan/Yellow Mtn.	SB LT	126	324	
			SB R	68	324	
		Jefferson St & Weller/Flannagan	NB LTR	310	293	
			WB LR	295	270	
			NB TR	293	324	
			SB LT	276	293	
	PM	Jefferson St & Reserve Ave.	NB L	70	100	
			SB L	93	220	
		Jefferson St & McClanahan/Yellow Mtn.	SB LT	232	324	
			SB R	102	324	
		Jefferson St & Site Entr.	NB LTR	242	293	
			WB LR	354	270	
			NB TR	60	324	
			SB LT	179	293	
		Jefferson St & Reserve Ave.	NB L	33	100	
			SB L	48	220	
2020 Buildout (Double Exit Ln)	AM	Jefferson St & McClanahan/Yellow Mtn.	SB LT	130	324	
			SB R	67	324	
		Jefferson St & Site Entr.	NB LTR	292	281	
			WB L	190	270	
			WB R	213	270	
			NB TR	282	324	
		Jefferson St & Reserve Ave.	SB LT	269	281	
	PM		NB L	132	100	
			SB L	72	220	
	Jefferson St & McClanahan/Yellow Mtn.	SB LT	198	324		
		SB R	106	324		
	Jefferson St & Site Entr.	NB LTR	271	281		
		WB L	310	270		
		WB R	238	270		
		NB TR	75	324		
		SB LT	194	281		
	Jefferson St & Reserve Ave.	NB L	36	100		
		SB L	46	220		

**Table 9.1 – Critical Movement Queue Length**

Scenario	Peak Hour	Intersection	Movement	Max. Queue Length (ft.)	Storage Length Available (ft.)
2020 Buildout (Double Exit Ln & Modified Jefferson St)	AM	Jefferson St & McClanahan/Yellow Mtn.	SB LT	134	324
			SB R	84	324
		Jefferson St & Weller/Flannagan	NB L	89	40
			NB TR	265	280
			WB L	151	270
			WB R	123	270
			NB TR	133	324
		Jefferson St & Site Entr.	SB L	188	170
			NB L	62	100
	PM	Jefferson St & Reserve Ave.	SB L	72	220
			SB LT	229	324
		Jefferson St & McClanahan/Yellow Mtn.	SB R	88	324
			NB L	89	40
			NB TR	172	280
		Jefferson St & Site Entr.	WB L	221	270
			WB R	134	270
			NB TR	77	324
			SB L	104	170
		Jefferson St & Reserve Ave.	NB L	32	100
			SB L	46	220

The reported maximum queue lengths at the westbound left turn lane at the intersection of Evans Mill Road and Weller Avenue exceed the available storage beginning in the 2015 Existing AM peak hour conditions. Weller Avenue between Evans Mill Road and Jefferson Street is only 60 feet from edge of pavement to edge of pavement. See **Appendix D** for SimTraffic Queue Reports.

The northbound left turn lane at the intersection of Jefferson Street and Reserve Avenue exceeds the available storage beginning in the 2015 Existing AM peak hour conditions.

In the buildout scenarios without modifications to Jefferson Street, the maximum reported queue length at the northbound approach to the intersection of Jefferson Street and Weller/Flannagan spills back into the proposed site entrance location during the AM peak hour. With modifications to Jefferson Street and a two lane exit from the site, the northbound approach reported queue length is reduced such that it does not spill back to the proposed site entrance in either peak hour.

All other public streets in the study network do not exceed their available storage lengths.

The proposed site entrance exiting trips will experience excessive queue lengths based on the projected traffic volumes in the AM and PM peak hours. The queues will stack back into the proposed parking garage. The two lane exit scenario produced considerably shorter queue lengths than the single lane exit scenario. Further, the two lane exit with modifications to Jefferson Street scenario produced shorter queue lengths than the current Jefferson Street lane configuration scenarios. **Table 9.2** compares the three scenarios.

**Table 9.2 – Build-Out Scenarios Queue Length Comparison**

Peak Hour	Scenario	Lane Configuration	Reported Max. Queue Length (Ft.)
AM	Jefferson St & Site Entr. (Single lane site exit)	WB LR	295
	Jefferson St & Site Entr. (Two lane site exit)	WB L	190
		WB R	213
	Jefferson St & Site Entr. (Two lane site exit & Modified Jefferson St.)	WB L	151
PM	Jefferson St & Site Entr. (Single lane site exit)	WB LR	354
	Jefferson St & Site Entr. (Two lane site exit)	WB L	310
		WB R	238
	Jefferson St & Site Entr. (Two lane site exit & Modified Jefferson St.)	WB L	221
		WB R	134

## 10.0 Pedestrian Accommodations

The proposed parking structure is anticipated to generate pedestrians that will visit other facilities within the Roanoke Memorial complex. Some of these facilities are on the opposite side of Jefferson Street from the proposed development. To facilitate the safety and accessibility for pedestrians of the west side of Jefferson Street from the proposed development, a raised refuge island is recommended. The raised refuge island should be located south of the proposed site entrance. Projected pedestrian volumes at this mid-block crosswalk location are discussed in Section 5.0.

See **Appendix E** for a conceptual layout of Jefferson Street and raised refuge island.

## 11.0 Conclusions and Recommendations

This study analyzes existing traffic operations of the study street network and impacts to these operations that might be expected upon completion of the proposed 15 story building with parking in the five lower levels and medical facilities in the upper ten levels. The study evaluates the impacts to vehicle level of service and delays, vehicle queue lengths at the study intersections, pedestrian accommodations, potential improvements to the Jefferson Street typical section, and site entrance lane configuration.

The medical facility is scheduled to be constructed and fully occupied by 2020. The study evaluates the proposed site entrance from Jefferson Street with three options. Option #1 provides a single exiting lane for left and right turn movements; option #2 provides two exit lanes, one each for left and right turn movements; option #3 replicates the two exit lane access to the site configuration and implements warranted improvements to Jefferson Street. (Refer to **Appendix E** for a conceptual layout of option #3.) The operational and queueing analyses indicate that option #3 will operate with less delay and less queue length than both option #1 and option #2.

It is recommended that option #3 (two exit lanes and modification to Jefferson Street) be implemented. The recommended modifications to Jefferson Street include a southbound left turn lane at the proposed site entrance, a northbound left turn lane at the northbound approach to the signalized intersection of Jefferson Street & Weller Avenue/Flannagan Drive, and creating an exclusive left turn lane in place of the existing through/left lane at the southbound approach to the Weller Avenue/Flannagan Drive intersection. Refer to **Appendix E** for a conceptual layout of the recommended modifications to Jefferson Street.

It is recommended that a full-access entrance be allowed for the site onto Jefferson Street. The recommended southbound left turn lane on Jefferson Street to the site should be minimum 170' to accommodate the turning volume. Two southbound through lanes should be provided between the site entrance and Flannagan/Weller intersection. The AM peak hour SimTraffic analysis indicates the queue length in the 170' left turn lane will be exceeded. The two adjacent through lanes will provide additional storage while maintaining adequate southbound through capacity during infrequent times in which the available left turn lane storage may be full. Furthermore, the two southbound through lanes allow more roadway capacity and thus more gaps to improve the egress from the site entrance. The recommended northbound left turn lane at the Weller Avenue/Flannagan Drive intersection should be minimum 40 feet. The provision of a northbound left turn lane, although short in length, will significantly reduce the frequency of lane blockage due to small left turn movement demand to Weller Avenue.

These modifications to Jefferson Street will require some curb and gutter relocation to achieve required lane widths.

To accommodate the proposed lane configuration on Jefferson Street described above, it is recommended that the southbound approach to the Flannagan/Weller intersection should be remarked to provide separate left, through, and right lanes.

Existing on-street parking on the east side of Jefferson Street should be eliminated to provide adequate sight distance for drivers exiting the parking structure. Replacement free public parking will be available in the new parking structure.

Pedestrians are projected to leave from and go to the proposed medical facility and parking structure as they access other medical facilities within the Roanoke Memorial complex. This study estimates 50 pedestrians per hour crossing Jefferson Street. It is recommended that a mid-block crosswalk be constructed parallel to the south edge of the new site entrance (refer to exhibit in **Appendix E**). Additionally, the construction of a pedestrian raised refuge island in Jefferson Street is recommended. The anticipated increase in pedestrians due to the proposed development does not cause adverse effects to vehicular operations within the study network. An in-road sign for motorist to yield to pedestrians within crosswalk (Sign R1-6, Virginia Supplement to the 2009 MUTCD) may be placed at the crosswalk location. Depending on actual pedestrian volumes upon implementation of the proposed facility, additional steps may be taken to protect pedestrians, including possibly implementing pedestrian actuated flashing beacons in advance of the crosswalk.

Should undesirable LOS at the exit from the parking structure be realized during actual operations, it is anticipated that drivers would use the secondary entrance to Flannagan Drive and the Jefferson Street traffic signal. This signal has adequate capacity to handle such additional traffic. Carilion prefers to provide a full-access entrance on Jefferson Street and allow drivers to make left turns out of the parking structure during all hours of the day, realizing that inconvenience due to delays at the exit during peak hours may be a consequence. Queueing of this exiting traffic will be on Carilion property and not on public right of way.

Per City of Roanoke recommendation, the three signalized intersections are analyzed as a coordinated system with 80 second cycle lengths. The LOS results of the coordinated system are such that this study recommends the three signalized intersections be coordinated upon implementation of the proposed development.

This analysis indicates that the existing study network provides adequate vehicular traffic capacity to accept the proposed development, so long as the afore mentioned measures are implemented for the site entrance from Jefferson Street, modifications to the Jefferson Street typical section, and for pedestrian accommodations at a mid-block crosswalk.

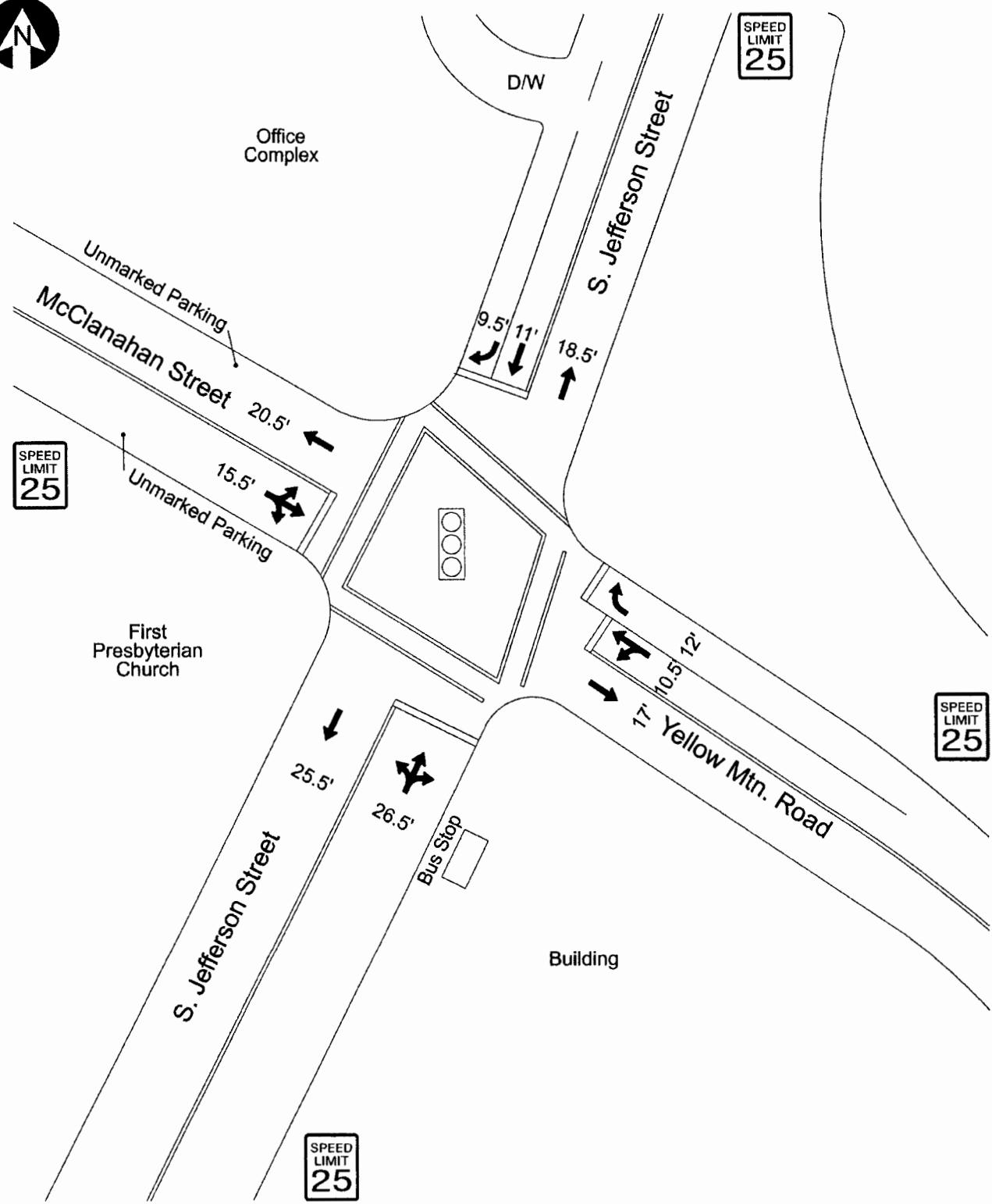
## **APPENDIX A**

Proposed Development Layout



## **APPENDIX B**

Turning Movement Counts



S. Jefferson Street  
at  
McClanahan Street

FIELD WORK BY: JW/JH JOB NO.: 2015-0106  
DRAWN BY: FB DGN NAME: *McClanahan @ S. Jefferson.dgn*  
DATE: February 10, 2015 LOCATION: Roanoke County, VA  
SCALE: N/A SHEET NO.: ? OF ?

**CARS TURNING MOVEMENT COUNT - SUMMARY**

Intersection of: S. Jefferson Street  
and: McClanahan Street  
Location: Roanoke, Virginia

Counted by: VCU

Date: February 03, 2015

Tuesday



Weather: Sunny/Cold

Entered by: SN

Star Rating: 5

TIME	TRAFFIC FROM NORTH					TRAFFIC FROM SOUTH					TRAFFIC FROM EAST					TRAFFIC FROM WEST					TOTAL N + S + E + W						
	on:	S. Jefferson Street				on:	S. Jefferson Street				on:	Yellow Mountain Road				on:	McClanahan Street										
		RIGHT	THRU	LEFT	U-TN	TOTAL		RIGHT	THRU	LEFT	U-TN	TOTAL		RIGHT	THRU	LEFT	U-TN	TOTAL		RIGHT	THRU	LEFT	U-TN	TOTAL			
<b>AM</b>																											
6:00 - 6:15	3	0	1	0	4	0	6	2	0	8	2	9	0	0	11	1	0	15	0	16	39						
6:15 - 6:30	6	4	0	0	10	0	5	1	0	6	4	14	0	0	18	1	0	24	0	25	59						
6:30 - 6:45	7	8	1	0	16	0	16	6	0	22	9	15	0	0	24	6	1	47	0	54	116						
6:45 - 7:00	10	11	0	0	21	0	16	4	0	20	10	17	0	0	27	0	4	26	0	30	98						
7:00 - 7:15	6	5	1	0	12	0	24	7	0	31	11	23	0	0	34	6	12	36	0	54	131						
7:15 - 7:30	17	10	3	0	30	0	33	9	0	42	8	23	0	0	31	3	5	34	0	42	145						
7:30 - 7:45	20	16	2	0	38	0	43	9	0	52	15	44	0	0	59	7	2	29	0	38	187						
7:45 - 8:00	18	20	1	0	39	0	57	6	0	63	35	34	0	0	69	13	7	44	0	64	235						
8:00 - 8:15	23	15	3	0	41	0	38	13	0	51	21	31	1	0	53	6	6	44	0	56	201						
8:15 - 8:30	28	11	5	0	44	1	37	6	0	44	10	29	0	0	39	4	6	57	0	67	194						
8:30 - 8:45	23	12	5	0	40	0	36	6	0	42	7	25	0	0	32	4	5	54	0	63	177						
8:45 - 9:00	27	8	2	0	37	0	31	9	2	42	10	17	0	0	27	6	9	39	1	55	161						
<b>3 Hr Totals</b>	<b>188</b>	<b>120</b>	<b>24</b>	<b>0</b>	<b>332</b>	<b>1</b>	<b>342</b>	<b>78</b>	<b>2</b>	<b>423</b>	<b>142</b>	<b>281</b>	<b>1</b>	<b>0</b>	<b>424</b>	<b>57</b>	<b>57</b>	<b>449</b>	<b>1</b>	<b>564</b>	<b>1743</b>						
<b>1 Hr Totals</b>																											
6:00 - 7:00	26	23	2	0	51	0	43	13	0	56	25	55	0	0	80	8	5	112	0	125	312						
6:15 - 7:15	29	28	2	0	59	0	61	18	0	79	34	69	0	0	103	13	17	133	0	163	404						
6:30 - 7:30	40	34	5	0	79	0	89	26	0	115	38	78	0	0	116	15	22	143	0	180	490						
6:45 - 7:45	53	42	6	0	101	0	116	29	0	145	44	107	0	0	151	16	23	125	0	164	561						
7:00 - 8:00	61	51	7	0	119	0	157	31	0	188	69	124	0	0	193	29	26	143	0	198	698						
7:15 - 8:15	78	61	9	0	148	0	171	37	0	208	79	132	1	0	212	29	20	151	0	200	768						
7:30 - 8:30	89	62	11	0	162	1	175	34	0	210	81	138	1	0	220	30	21	174	0	225	817						
7:45 - 8:45	92	58	14	0	164	1	168	31	0	200	73	119	1	0	193	27	24	199	0	250	807						
8:00 - 9:00	101	46	15	0	162	1	142	34	2	179	48	102	1	0	151	20	26	194	1	241	733						
<b>PEAK HOUR</b>	<b>7:30 - 8:30</b>	<b>89</b>	<b>62</b>	<b>11</b>	<b>0</b>	<b>162</b>	<b>1</b>	<b>175</b>	<b>34</b>	<b>0</b>	<b>210</b>	<b>81</b>	<b>138</b>	<b>1</b>	<b>0</b>	<b>220</b>	<b>30</b>	<b>21</b>	<b>174</b>	<b>0</b>	<b>225</b>	<b>817</b>					
<b>PM</b>																											
3:00 - 3:15	29	10	6	0	45	0	11	7	0	18	3	18	0	0	21	4	16	57	0	77	161						
3:15 - 3:30	35	13	6	0	54	2	13	12	0	27	5	8	0	0	13	4	21	37	0	62	156						
3:30 - 3:45	34	12	5	0	51	0	9	9	0	18	4	14	0	0	18	5	14	66	0	85	172						
3:45 - 4:00	52	16	8	0	76	1	19	11	0	31	7	11	0	0	18	6	19	43	0	68	193						
4:00 - 4:15	35	19	9	0	63	0	24	17	0	41	3	17	0	0	20	3	27	36	0	66	190						
4:15 - 4:30	32	11	17	0	60	0	15	7	0	22	6	13	0	0	19	7	19	47	0	73	174						
4:30 - 4:45	34	23	14	0	71	1	15	15	0	31	7	23	0	0	30	4	30	42	0	76	208						
4:45 - 5:00	38	27	22	0	87	2	19	16	0	37	1	17	0	0	18	2	30	51	0	83	225						
5:00 - 5:15	50	37	12	0	99	1	17	26	0	44	4	13	0	0	17	5	41	41	0	87	247						
5:15 - 5:30	44	40	18	0	102	0	24	12	0	36	5	18	1	0	24	7	36	42	0	85	247						
5:30 - 5:45	36	31	18	0	85	0	9	6	0	15	2	12	0	0	14	5	41	52	0	98	212						
5:45 - 6:00	29	24	20	0	73	0	18	0	0	18	3	14	0	0	17	10	22	38	0	70	178						
<b>3 Hr Totals</b>	<b>448</b>	<b>263</b>	<b>155</b>	<b>0</b>	<b>866</b>	<b>7</b>	<b>193</b>	<b>138</b>	<b>0</b>	<b>338</b>	<b>50</b>	<b>178</b>	<b>1</b>	<b>0</b>	<b>229</b>	<b>62</b>	<b>316</b>	<b>552</b>	<b>0</b>	<b>930</b>	<b>2363</b>						
<b>1 Hr Totals</b>																											
3:00 - 4:00	150	51	25	0	226	3	52	39	0	94	19	51	0	0	70	19	70	203	0	292	682						
3:15 - 4:15	156	60	28	0	244	3	65	49	0	117	19	50	0	0	69	18	81	182	0	281	711						
3:30 - 4:30	153	58	39	0	250	1	67	44	0	112	20	55	0	0	75	21	79	192	0	292	729						
3:45 - 4:45	153	69	48	0	270	2	73	50	0	125	23	64	0	0	87	20	95	168	0	283	765						
4:00 - 5:00	139	80	62	0	281	3	73	55	0	131	17	70	0	0	87	16	106	176	0	298	797						
4:15 - 5:15	154	98	65	0	317	4	66	64	0	134	18	66	0	0	84	18	120	181	0	319	854						
4:30 - 5:30	166	127	66	0	359	4	75	69	0	148	17	71	1	0	89	18	137	176	0	331	927						
4:45 - 5:45	168	135	70	0	373	3	69	60	0	132	12	60	1	0	73	19	148	186	0	353	931						
<b>5:00 - 6:00</b>	<b>159</b>	<b>132</b>	<b>68</b>	<b>0</b>	<b>359</b>	<b>1</b>	<b>68</b>	<b>44</b>	<b>0</b>	<b>113</b>	<b>14</b>	<b>57</b>	<b>1</b>	<b>0</b>	<b>72</b>	<b>27</b>	<b>140</b>	<b>173</b>	<b>0</b>	<b>340</b>	<b>884</b>						
<b>4:45 - 5:45</b>	<b>168</b>	<b>135</b>	<b>70</b>	<b>0</b>	<b>373</b>	<b>3</b>	<b>69</b>	<b>60</b>	<b>0</b>	<b>132</b>	<b>12</b>	<b>60</b>	<b>1</b>	<b>0</b>	<b>73</b>	<b>19</b>	<b>148</b>	<b>186</b>	<b>0</b>	<b>353</b>	<b>931</b>						

**HEAVY TRUCKS TURNING MOVEMENT COUNT - SUMMARY**

Counted by: VCU

Date: February 03, 2015

Tuesday


 Intersection of: S. Jefferson Street  
 and: McClanahan Street  
 Location: Roanoke, Virginia

Weather: Sunny/Cold

Entered by: SN

Star Rating: 5

TIME	TRAFFIC FROM NORTH on: S. Jefferson Street					TRAFFIC FROM SOUTH on: S. Jefferson Street					TRAFFIC FROM EAST on: Yellow Mountain Road					TRAFFIC FROM WEST on: McClanahan Street					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
<b>AM</b>																					
6:00 - 6:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
6:15 - 6:30	1	0	0	0	1	0	1	0	0	1	0	1	0	0	1	0	0	1	0	1	4
6:30 - 6:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
6:45 - 7:00	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
7:00 - 7:15	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	4
7:15 - 7:30	4	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	5
7:30 - 7:45	1	0	1	0	2	0	1	0	0	1	0	1	0	0	1	0	0	1	0	1	5
7:45 - 8:00	0	1	0	0	1	0	0	1	0	1	0	1	0	0	1	1	0	1	0	2	5
8:00 - 8:15	2	0	0	0	2	0	0	1	0	1	0	1	0	0	1	1	1	0	3	0	8
8:15 - 8:30	1	1	0	0	2	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	4
8:30 - 8:45	4	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	7
8:45 - 9:00	2	1	0	0	3	0	1	0	0	1	0	0	0	0	0	0	0	1	0	1	5
<b>3 Hr Totals</b>	17	4	1	0	22	0	5	2	0	7	0	4	0	0	4	2	1	16	0	19	52
<b>1 Hr Totals</b>																					
6:00 - 7:00	1	1	0	0	2	0	1	0	0	1	0	1	0	0	1	0	0	5	0	5	9
6:15 - 7:15	3	1	0	0	4	0	1	0	0	1	0	1	0	0	1	0	1	4	0	5	11
6:30 - 7:30	6	1	0	0	7	0	0	0	0	0	0	0	0	0	0	0	1	4	0	5	12
6:45 - 7:45	7	1	1	0	9	0	1	0	0	1	0	1	0	0	1	0	1	4	0	5	16
7:00 - 8:00	7	1	1	0	9	0	1	1	0	2	0	2	0	0	2	1	1	4	0	6	19
7:15 - 8:15	7	1	1	0	9	0	1	2	0	3	0	3	0	0	3	2	0	6	0	8	23
7:30 - 8:30	4	2	1	0	7	0	3	2	0	5	0	3	0	0	3	2	0	5	0	7	22
7:45 - 8:45	7	2	0	0	9	0	2	2	0	4	0	2	0	0	2	2	0	7	0	9	24
8:00 - 9:00	9	2	0	0	11	0	3	1	0	4	0	1	0	0	1	1	0	7	0	8	24
<b>PEAK HOUR</b>																					
<b>7:30 - 8:30</b>	4	2	1	0	7	0	3	2	0	5	0	3	0	0	3	2	0	5	0	7	22
<b>PM</b>																					
3:00 - 3:15	5	0	0	0	5	0	1	0	0	1	0	0	0	0	0	0	0	4	0	4	10
3:15 - 3:30	1	0	0	0	1	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	3
3:30 - 3:45	3	0	0	0	3	0	0	0	0	0	0	1	0	0	1	0	0	2	0	2	6
3:45 - 4:00	1	1	0	0	2	0	1	1	0	2	0	0	0	0	0	1	1	2	0	4	8
4:00 - 4:15	1	2	0	0	3	0	0	1	0	1	0	1	0	0	1	0	0	2	0	2	7
4:15 - 4:30	3	0	1	0	4	0	1	0	0	1	0	0	0	0	0	0	1	1	0	2	7
4:30 - 4:45	7	0	0	0	7	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	8
4:45 - 5:00	1	1	0	0	2	0	1	0	0	1	0	0	0	0	0	0	0	2	0	2	5
5:00 - 5:15	1	0	0	0	1	0	1	0	0	1	0	0	0	0	0	0	0	1	0	1	3
5:15 - 5:30	2	0	0	0	2	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	3
5:30 - 5:45	2	0	0	0	2	0	1	0	0	1	0	0	0	0	0	0	0	2	0	2	5
5:45 - 6:00	1	1	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	4
<b>3 Hr Totals</b>	28	5	1	0	34	0	8	3	0	11	0	3	0	0	3	1	3	17	0	21	69
<b>1 Hr Totals</b>																					
3:00 - 4:00	10	1	0	0	11	0	3	1	0	4	0	1	0	0	1	1	2	8	0	11	27
3:15 - 4:15	6	3	0	0	9	0	2	2	0	4	0	2	0	0	2	1	2	6	0	9	24
3:30 - 4:30	8	3	1	0	12	0	2	2	0	4	0	2	0	0	2	1	2	7	0	10	28
3:45 - 4:45	12	3	1	0	16	0	3	2	0	5	0	1	0	0	1	1	2	5	0	8	30
4:00 - 5:00	12	3	1	0	16	0	3	1	0	4	0	1	0	0	1	0	1	5	0	6	27
4:15 - 5:15	12	1	1	0	14	0	4	0	0	4	0	0	0	0	0	0	1	4	0	5	23
4:30 - 5:30	11	1	0	0	12	0	3	1	0	4	0	0	0	0	0	0	0	3	0	3	19
4:45 - 5:45	6	1	0	0	7	0	3	1	0	4	0	0	0	0	0	0	0	5	0	5	16
5:00 - 6:00	6	1	0	0	7	0	2	1	0	3	0	1	0	0	1	0	0	4	0	4	15
<b>4:45 - 5:45</b>	6	1	0	0	7	0	3	1	0	4	0	0	0	0	0	0	0	5	0	5	16

## BICYCLES TURNING MOVEMENT COUNT - SUMMARY

Counted by: VCU

Date: February 03, 2015

Tuesday



**Intersection of: S. Jefferson Street  
and: McClanahan Street  
Location: Roanoke, Virginia**

Weather: Sun

Entered by: SN

Entered by: SN

Entered by: SN

### **Star Rating: 5**

**PEDESTRIAN AND BICYCLE OBSERVATIONS - SUMMARY**

 Intersection of: S. Jefferson Street  
 and: McClanahan Street  
 Location: Roanoke, Virginia

Counted by: VCU

Date: February 03, 2015

Tuesday

Weather: Sunny/Cold

Entered by: SN



Star Rating: 5

TIME	NORTH LEG S. Jefferson Street		SOUTH LEG S. Jefferson Street	
	Pedestrians	Bicycles	Pedestrians	Bicycles
<b>AM</b>				
6:00 - 6:15	0	0	0	0
6:15 - 6:30	0	0	0	0
6:30 - 6:45	0	0	1	0
6:45 - 7:00	0	0	0	0
7:00 - 7:15	0	0	0	0
7:15 - 7:30	2	0	1	0
7:30 - 7:45	3	0	5	0
7:45 - 8:00	2	0	2	0
8:00 - 8:15	1	0	3	0
8:15 - 8:30	0	0	3	0
8:30 - 8:45	1	0	2	0
8:45 - 9:00	2	0	1	0
<b>TOTALS</b>	11	0	18	0
<b>PM</b>				
3:00 - 3:15	0	0	3	0
3:15 - 3:30	1	0	1	0
3:30 - 3:45	1	0	0	0
3:45 - 4:00	2	0	2	0
4:00 - 4:15	1	0	5	0
4:15 - 4:30	1	0	1	0
4:30 - 4:45	1	0	7	0
4:45 - 5:00	2	0	2	0
5:00 - 5:15	5	0	1	0
5:15 - 5:30	1	0	3	0
5:30 - 5:45	1	0	0	0
5:45 - 6:00	0	0	0	0
<b>TOTALS</b>	16	0	25	0
	EAST LEG Yellow Mountain Road		WEST LEG McClanahan Street	
	Pedestrians	Bicycles	Pedestrians	Bicycles
<b>AM</b>				
6:00 - 6:15	0	0	2	0
6:15 - 6:30	1	0	2	0
6:30 - 6:45	1	0	5	0
6:45 - 7:00	1	0	3	0
7:00 - 7:15	1	0	5	0
7:15 - 7:30	4	0	8	0
7:30 - 7:45	7	0	10	0
7:45 - 8:00	5	0	17	0
8:00 - 8:15	3	0	11	0
8:15 - 8:30	1	0	7	0
8:30 - 8:45	1	0	5	0
8:45 - 9:00	3	0	2	0
<b>TOTALS</b>	28	0	77	0
<b>PM</b>				
3:00 - 3:15	1	0	4	0
3:15 - 3:30	6	0	3	0
3:30 - 3:45	1	0	3	0
3:45 - 4:00	10	0	5	0
4:00 - 4:15	5	0	7	0
4:15 - 4:30	2	0	2	0
4:30 - 4:45	5	0	17	0
4:45 - 5:00	5	0	6	0
5:00 - 5:15	9	0	9	0
5:15 - 5:30	3	0	7	0
5:30 - 5:45	2	0	3	0
5:45 - 6:00	4	0	0	0
<b>TOTALS</b>	53	0	66	0

**TOTALS TURNING MOVEMENT COUNT - SUMMARY**

Counted by: VCU

Date: February 03, 2015

Tuesday

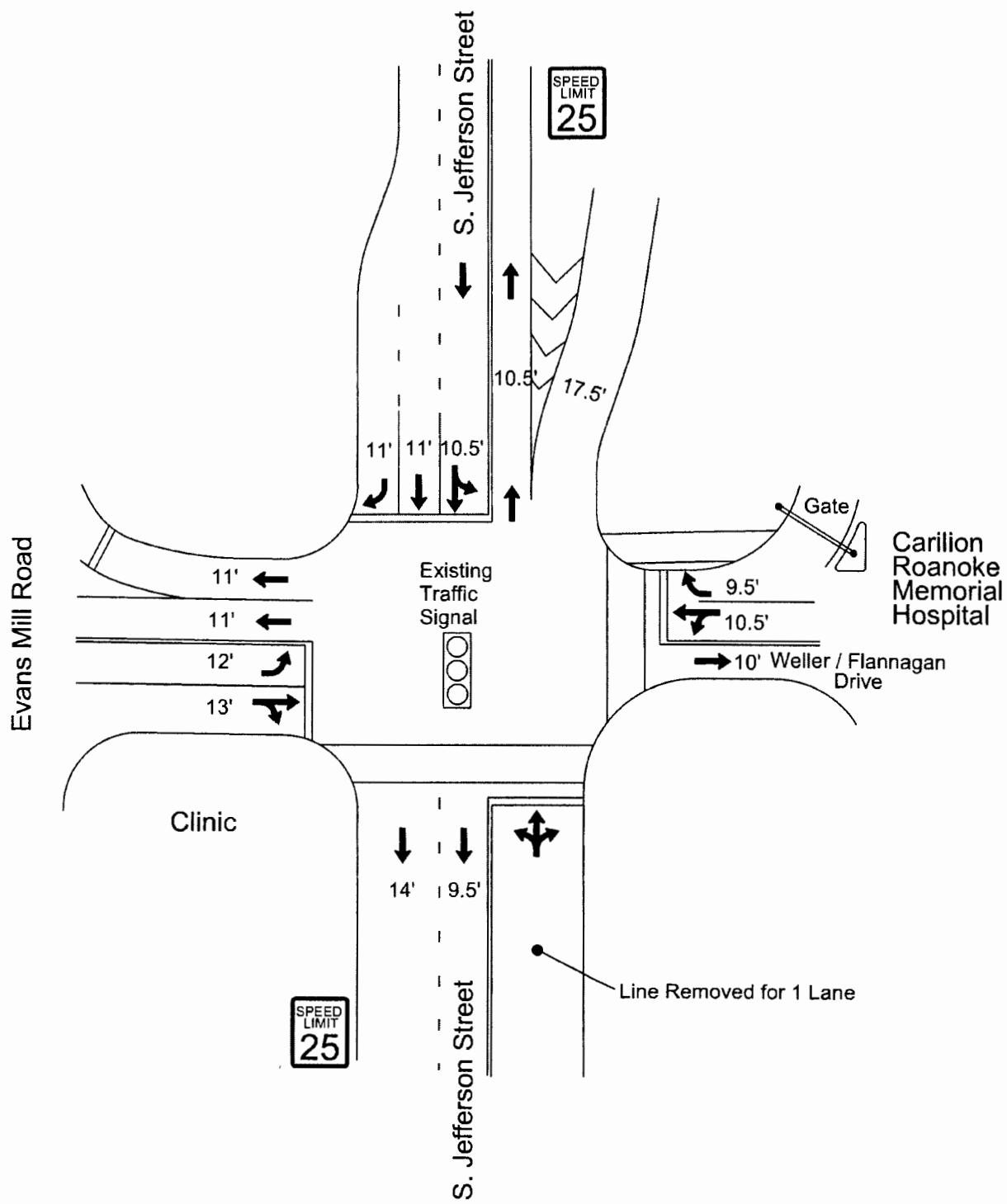

 Intersection of: S. Jefferson Street  
 and: McCianahan Street  
 Location: Roanoke, Virginia

Weather: Sunny/Cold

Entered by: SN

Star Rating: 5

TIME	TRAFFIC FROM NORTH on: S. Jefferson Street					TRAFFIC FROM SOUTH on: S. Jefferson Street					TRAFFIC FROM EAST on: Yellow Mountain Road					TRAFFIC FROM WEST on: McCianahan Street					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
<b>AM</b>																					
6:00 - 6:15	3	0	1	0	4	0	6	2	0	8	2	9	0	0	11	1	0	17	0	18	41
6:15 - 6:30	7	4	0	0	11	0	6	1	0	7	4	15	0	0	19	1	0	25	0	26	63
6:30 - 6:45	7	8	1	0	16	0	16	6	0	22	9	15	0	0	24	6	1	48	0	55	117
6:45 - 7:00	10	12	0	0	22	0	16	4	0	20	10	17	0	0	27	0	4	27	0	31	100
7:00 - 7:15	8	5	1	0	14	0	24	7	0	31	11	23	0	0	34	6	13	37	0	56	135
7:15 - 7:30	21	10	3	0	34	0	33	9	0	42	8	23	0	0	31	3	5	35	0	43	150
7:30 - 7:45	21	16	3	0	40	0	44	9	0	53	15	45	0	0	60	7	2	30	0	39	192
7:45 - 8:00	18	21	1	0	40	0	57	7	0	64	35	35	0	0	70	14	7	45	0	66	240
8:00 - 8:15	25	15	3	0	43	0	38	14	0	52	21	32	1	0	54	7	6	47	0	60	209
8:15 - 8:30	29	12	5	0	46	1	39	6	0	46	10	29	0	0	39	4	6	57	0	67	198
8:30 - 8:45	27	12	5	0	44	0	36	6	0	42	7	25	0	0	32	4	5	57	0	66	184
8:45 - 9:00	29	9	2	0	40	0	32	9	2	43	10	17	0	0	27	6	9	40	1	56	166
<b>3 Hr Totals</b>	<b>205</b>	<b>124</b>	<b>25</b>	<b>0</b>	<b>354</b>	<b>1</b>	<b>347</b>	<b>80</b>	<b>2</b>	<b>430</b>	<b>142</b>	<b>285</b>	<b>1</b>	<b>0</b>	<b>428</b>	<b>59</b>	<b>58</b>	<b>465</b>	<b>1</b>	<b>583</b>	<b>1795</b>
<b>1 Hr Totals</b>																					
6:00 - 7:00	27	24	2	0	53	0	44	13	0	57	25	56	0	0	81	8	5	117	0	130	321
6:15 - 7:15	32	29	2	0	63	0	62	18	0	80	34	70	0	0	104	13	18	137	0	168	415
6:30 - 7:30	46	35	5	0	86	0	89	26	0	115	38	78	0	0	116	15	23	147	0	185	502
6:45 - 7:45	60	43	7	0	110	0	117	29	0	146	44	108	0	0	152	16	24	129	0	169	577
7:00 - 8:00	68	52	8	0	128	0	158	32	0	190	69	126	0	0	195	30	27	147	0	204	717
7:15 - 8:15	85	62	10	0	157	0	172	39	0	211	79	135	1	0	215	31	20	157	0	208	791
7:30 - 8:30	93	64	12	0	169	1	178	36	0	215	81	141	1	0	223	32	21	179	0	232	839
7:45 - 8:45	99	60	14	0	173	1	170	33	0	204	73	121	1	0	195	29	24	206	0	259	831
8:00 - 9:00	110	48	15	0	173	1	145	35	2	183	48	103	1	0	152	21	26	201	1	249	757
<b>PEAK HOUR</b>																					
<b>7:30 - 8:30</b>	<b>93</b>	<b>64</b>	<b>12</b>	<b>0</b>	<b>169</b>	<b>1</b>	<b>178</b>	<b>36</b>	<b>0</b>	<b>215</b>	<b>81</b>	<b>141</b>	<b>1</b>	<b>0</b>	<b>223</b>	<b>32</b>	<b>21</b>	<b>179</b>	<b>0</b>	<b>232</b>	<b>839</b>
<b>PM</b>																					
3:00 - 3:15	34	10	6	0	50	0	12	7	0	19	3	18	0	0	21	4	16	61	0	81	171
3:15 - 3:30	36	13	6	0	55	2	14	12	0	28	5	8	0	0	13	4	22	37	0	63	159
3:30 - 3:45	37	12	5	0	54	0	9	9	0	18	4	15	0	0	19	5	14	68	0	87	178
3:45 - 4:00	53	17	8	0	78	1	20	12	0	33	7	11	0	0	18	7	20	45	0	72	201
4:00 - 4:15	36	21	9	0	66	0	24	18	0	42	3	18	0	0	21	3	27	38	0	68	197
4:15 - 4:30	35	11	18	0	64	0	16	7	0	23	6	13	0	0	19	7	20	48	0	75	181
4:30 - 4:45	41	23	14	0	78	1	16	15	0	32	7	23	0	0	30	4	30	42	0	76	216
4:45 - 5:00	39	28	22	0	89	2	20	16	0	38	1	17	0	0	18	2	30	53	0	85	230
5:00 - 5:15	51	37	12	0	100	1	18	26	0	45	4	13	0	0	17	5	41	42	0	88	250
5:15 - 5:30	46	40	18	0	104	0	24	13	0	37	5	18	1	0	24	7	36	42	0	85	250
5:30 - 5:45	38	31	18	0	87	0	10	6	0	16	2	12	0	0	14	5	41	54	0	100	217
5:45 - 6:00	30	25	20	0	75	0	18	0	0	18	3	15	0	0	18	10	22	39	0	71	182
<b>3 Hr Totals</b>	<b>476</b>	<b>268</b>	<b>156</b>	<b>0</b>	<b>900</b>	<b>7</b>	<b>201</b>	<b>141</b>	<b>0</b>	<b>349</b>	<b>50</b>	<b>181</b>	<b>1</b>	<b>0</b>	<b>232</b>	<b>63</b>	<b>319</b>	<b>569</b>	<b>0</b>	<b>951</b>	<b>2432</b>
<b>1 Hr Totals</b>																					
3:00 - 4:00	160	52	25	0	237	3	55	40	0	98	19	52	0	0	71	20	72	211	0	303	709
3:15 - 4:15	162	63	28	0	253	3	67	51	0	121	19	52	0	0	71	19	83	188	0	290	735
3:30 - 4:30	161	61	40	0	262	1	69	46	0	116	20	57	0	0	77	22	81	199	0	302	757
3:45 - 4:45	165	72	49	0	286	2	76	52	0	130	23	65	0	0	88	21	97	173	0	291	795
4:00 - 5:00	151	83	63	0	297	3	76	56	0	135	17	71	0	0	88	16	107	181	0	304	824
4:15 - 5:15	166	99	66	0	331	4	70	64	0	138	18	66	0	0	84	18	121	185	0	324	877
4:30 - 5:30	177	128	66	0	371	4	78	70	0	152	17	71	1	0	89	18	137	179	0	334	946
4:45 - 5:45	174	136	70	0	380	3	72	61	0	136	12	60	1	0	73	19	148	191	0	358	947
<b>5:00 - 6:00</b>	<b>165</b>	<b>133</b>	<b>68</b>	<b>0</b>	<b>366</b>	<b>1</b>	<b>70</b>	<b>45</b>	<b>0</b>	<b>116</b>	<b>14</b>	<b>58</b>	<b>1</b>	<b>0</b>	<b>73</b>	<b>27</b>	<b>140</b>	<b>177</b>	<b>0</b>	<b>344</b>	<b>899</b>
<b>4:45 - 5:45</b>	<b>174</b>	<b>136</b>	<b>70</b>	<b>0</b>	<b>380</b>	<b>3</b>	<b>72</b>	<b>61</b>	<b>0</b>	<b>136</b>	<b>12</b>	<b>60</b>	<b>1</b>	<b>0</b>	<b>73</b>	<b>19</b>	<b>148</b>	<b>191</b>	<b>0</b>	<b>358</b>	<b>947</b>



S. Jefferson Street  
at  
Weller Avenue / Flannagan Drive

FIELD WORK BY: JW/JH JOB NO.: 2015-0106  
DRAWN BY: PRD DGN NAME: S Jefferson St at Weller.dgn  
DATE: February 10, 2015 LOCATION: Roanoke, VA  
SCALE: N/A SHEET NO.: 2 OF 3

**CARS TURNING MOVEMENT COUNT - SUMMARY**

Counted by: VCU

Date: February 03, 2015

Tuesday



Intersection of: S. Jefferson Street

Weather: Sunny/Cold

and: Flannagan Drive - Weller Avenue

Entered by: SN

Star Rating: 4

Location: Roanoke, Virginia

TIME	TRAFFIC FROM NORTH on: S. Jefferson Street					TRAFFIC FROM SOUTH on: S. Jefferson Street					TRAFFIC FROM EAST on: Flannagan Drive					TRAFFIC FROM WEST on: Weller Avenue					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
<b>AM</b>																					
6:00 - 6:15	3	2	7	0	12	8	14	1	0	23	0	0	1	0	1	0	3	0	0	3	39
6:15 - 6:30	17	8	11	0	36	13	20	0	0	33	4	0	1	0	5	2	7	1	0	10	84
6:30 - 6:45	9	10	17	0	36	35	33	0	0	68	1	2	2	0	5	3	9	1	0	13	122
6:45 - 7:00	9	18	7	0	34	16	38	1	0	55	1	0	3	0	4	4	4	8	0	16	109
7:00 - 7:15	7	11	12	0	30	14	45	0	0	59	6	2	1	0	9	3	9	6	0	18	116
7:15 - 7:30	15	27	13	0	55	11	63	1	0	75	6	2	5	0	13	7	11	6	0	24	167
7:30 - 7:45	15	26	10	0	51	12	90	0	0	102	6	5	8	0	19	5	8	9	0	22	194
7:45 - 8:00	23	37	9	0	69	12	119	4	0	135	3	1	2	0	6	8	9	6	0	23	233
8:00 - 8:15	25	24	11	0	60	15	88	3	0	106	4	0	3	0	7	6	5	6	0	17	190
8:15 - 8:30	18	31	12	0	61	7	95	1	0	103	9	1	5	0	15	8	10	11	0	29	208
8:30 - 8:45	19	34	13	0	66	4	85	2	0	91	5	0	2	0	7	6	6	7	0	19	183
8:45 - 9:00	18	27	12	0	57	7	75	1	0	83	7	2	3	0	12	3	3	13	0	19	171
<b>3 Hr Totals</b>	178	255	134	0	567	154	765	14	0	933	52	15	36	0	103	55	84	74	0	213	1816
<b>1 Hr Totals</b>																					
6:00 - 7:00	38	38	42	0	118	72	105	2	0	179	6	2	7	0	15	9	23	10	0	42	354
6:15 - 7:15	42	47	47	0	136	78	136	1	0	215	12	4	7	0	23	12	29	16	0	57	431
6:30 - 7:30	40	66	49	0	155	76	179	2	0	257	14	6	11	0	31	17	33	21	0	71	514
6:45 - 7:45	46	82	42	0	170	53	236	2	0	291	19	9	17	0	45	19	32	29	0	80	586
7:00 - 8:00	60	101	44	0	205	49	317	5	0	371	21	10	16	0	47	23	37	27	0	87	710
7:15 - 8:15	78	114	43	0	235	50	360	8	0	418	19	8	18	0	45	26	33	27	0	86	784
7:30 - 8:30	81	118	42	0	241	46	392	8	0	446	22	7	18	0	47	27	32	32	0	91	825
7:45 - 8:45	85	126	45	0	256	38	387	10	0	435	21	2	12	0	35	28	30	30	0	88	814
8:00 - 9:00	80	116	48	0	244	33	343	7	0	383	25	3	13	0	41	23	24	37	0	84	752
<b>PEAK HOUR</b>																					
<b>7:30 - 8:30</b>	81	118	42	0	241	46	392	8	0	446	22	7	18	0	47	27	32	32	0	91	825
<b>PM</b>																					
3:00 - 3:15	16	37	11	0	64	11	62	1	0	74	8	4	9	0	21	5	11	16	0	32	191
3:15 - 3:30	12	38	9	0	59	4	48	1	0	53	14	8	6	0	28	3	8	14	0	25	165
3:30 - 3:45	15	48	9	0	72	12	65	2	0	79	9	7	5	0	21	2	15	14	0	31	203
3:45 - 4:00	12	58	16	0	86	7	57	3	0	67	5	2	5	0	12	13	17	11	0	41	206
4:00 - 4:15	9	41	7	0	57	8	61	4	0	73	8	0	9	0	17	4	16	18	0	38	185
4:15 - 4:30	8	42	11	0	61	9	58	2	0	69	6	2	8	0	16	9	9	15	0	33	179
4:30 - 4:45	5	57	9	0	71	6	56	3	0	65	5	2	9	0	16	9	6	20	0	35	187
4:45 - 5:00	15	66	11	0	92	6	44	1	0	51	8	2	4	0	14	15	14	17	0	46	203
5:00 - 5:15	14	79	9	0	102	6	56	1	0	63	10	2	4	0	16	18	15	14	0	47	228
5:15 - 5:30	12	70	6	0	88	3	64	0	0	67	7	0	10	0	17	8	6	10	0	24	196
5:30 - 5:45	12	75	11	0	98	7	51	2	0	60	2	2	6	0	10	11	8	6	0	25	193
5:45 - 6:00	4	55	14	0	73	11	48	0	0	59	4	1	3	0	8	10	5	6	0	21	161
<b>3 Hr Totals</b>	134	666	123	0	923	90	670	20	0	780	86	32	78	0	196	107	130	161	0	398	2297
<b>1 Hr Totals</b>																					
3:00 - 4:00	55	181	45	0	281	34	232	7	0	273	36	21	25	0	82	23	51	55	0	129	765
3:15 - 4:15	48	185	41	0	274	31	231	10	0	272	36	17	25	0	78	22	56	57	0	135	759
3:30 - 4:30	44	189	43	0	276	36	241	11	0	288	28	11	27	0	66	28	57	58	0	143	773
3:45 - 4:45	34	198	43	0	275	30	232	12	0	274	24	6	31	0	61	35	48	64	0	147	757
4:00 - 5:00	37	206	38	0	281	29	219	10	0	258	27	6	30	0	63	37	45	70	0	152	754
4:15 - 5:15	42	244	40	0	326	27	214	7	0	248	29	8	25	0	62	51	44	66	0	161	797
4:30 - 5:30	46	272	35	0	353	21	220	5	0	246	30	6	27	0	63	50	41	61	0	152	814
4:45 - 5:45	53	290	37	0	380	22	215	4	0	241	27	6	24	0	57	52	43	47	0	142	820
5:00 - 6:00	42	279	40	0	361	27	219	3	0	249	23	5	23	0	51	47	34	36	0	117	778
<b>PEAK HOUR</b>																					
<b>4:45 - 5:45</b>	53	290	37	0	380	22	215	4	0	241	27	6	24	0	57	52	43	47	0	142	820

**HEAVY TRUCKS TURNING MOVEMENT COUNT - SUMMARY**

Counted by: VCU

Intersection of: S. Jefferson Street

Date: February 03, 2015

Tuesday

and: Flannagan Drive - Weller Avenue

Weather: Sunny/Cold



Location: Roanoke, Virginia

Entered by: SN

Star Rating: 4

TIME	TRAFFIC FROM NORTH on: S. Jefferson Street					TRAFFIC FROM SOUTH on: S. Jefferson Street					TRAFFIC FROM EAST on: Flannagan Drive					TRAFFIC FROM WEST on: Weller Avenue					TOTAL N + S + E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
<b>AM</b>																					
6:00 - 6:15	0	0	0	0	0	0	1	1	0	2	1	0	0	0	1	0	0	0	0	0	3
6:15 - 6:30	0	0	1	0	1	0	2	0	0	2	1	0	0	0	1	1	0	0	0	0	5
6:30 - 6:45	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	2
6:45 - 7:00	1	0	1	0	2	1	1	0	0	2	0	0	0	0	0	1	0	0	0	0	5
7:00 - 7:15	0	2	1	0	3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	4
7:15 - 7:30	0	2	0	0	2	1	0	0	0	1	0	0	1	0	1	1	1	2	0	4	8
7:30 - 7:45	0	2	0	0	2	0	1	0	0	1	0	1	0	0	1	0	0	2	0	2	6
7:45 - 8:00	1	1	0	0	2	0	1	0	0	1	0	0	0	0	0	1	1	1	0	3	6
8:00 - 8:15	0	1	1	0	2	0	1	2	0	3	0	0	0	0	0	0	0	1	0	1	6
8:15 - 8:30	2	1	0	0	3	0	1	0	0	1	0	0	0	0	0	2	2	1	0	5	9
8:30 - 8:45	0	2	2	0	4	0	2	0	0	2	0	0	0	0	0	0	0	1	0	1	7
8:45 - 9:00	2	1	1	0	4	0	2	0	0	2	0	0	1	0	1	1	1	1	0	3	10
<b>3 Hr Totals</b>	6	12	7	0	25	2	13	3	0	18	2	2	2	0	6	7	5	10	0	22	71
<b>1 Hr Totals</b>																					
6:00 - 7:00	1	0	2	0	3	1	5	1	0	7	2	1	0	0	3	2	0	0	0	0	15
6:15 - 7:15	1	2	3	0	6	1	4	0	0	5	1	1	0	0	2	2	0	1	0	3	16
6:30 - 7:30	1	4	2	0	7	2	2	0	0	4	0	1	1	0	2	2	1	3	0	6	19
6:45 - 7:45	1	6	2	0	9	2	2	0	0	4	0	1	1	0	2	2	1	5	0	8	23
7:00 - 8:00	1	7	1	0	9	1	2	0	0	3	0	1	1	0	2	2	2	6	0	10	24
7:15 - 8:15	1	6	1	0	8	1	3	2	0	6	0	1	1	0	2	2	2	6	0	10	26
7:30 - 8:30	3	5	1	0	9	0	4	2	0	6	0	1	0	0	1	3	3	5	0	11	27
7:45 - 8:45	3	5	3	0	11	0	5	2	0	7	0	0	0	0	0	3	3	4	0	10	28
8:00 - 9:00	4	5	4	0	13	0	6	2	0	8	0	0	1	0	1	3	3	4	0	10	32
<b>PEAK HOUR</b>																					
<b>7:30 - 8:30</b>	3	5	1	0	9	0	4	2	0	6	0	1	0	0	1	3	3	5	0	11	27
<b>PM</b>																					
3:00 - 3:15	2	1	1	0	4	0	3	0	0	3	0	0	3	0	3	0	2	0	0	2	12
3:15 - 3:30	2	1	1	0	4	0	3	0	0	3	1	0	0	0	1	0	0	2	0	2	10
3:30 - 3:45	0	2	2	0	4	0	2	0	0	2	0	0	0	0	0	1	0	1	0	2	8
3:45 - 4:00	0	1	0	0	1	0	3	0	0	3	0	0	0	0	0	1	0	2	0	3	7
4:00 - 4:15	1	3	4	0	8	1	1	0	0	2	0	0	0	0	0	0	1	0	1	0	12
4:15 - 4:30	0	3	1	0	4	0	3	0	0	3	0	0	0	0	0	1	0	1	0	2	9
4:30 - 4:45	0	2	0	0	2	0	1	0	0	1	1	0	2	0	3	1	0	1	0	2	8
4:45 - 5:00	0	1	0	0	1	0	2	0	0	2	2	0	0	0	2	1	0	1	0	2	7
5:00 - 5:15	1	2	0	0	3	0	2	0	0	2	0	0	1	0	1	1	0	1	0	2	8
5:15 - 5:30	0	1	0	0	1	0	0	0	0	0	1	0	0	0	1	0	0	1	0	1	3
5:30 - 5:45	0	3	0	0	3	1	2	0	0	3	0	0	0	0	0	1	0	1	0	2	8
5:45 - 6:00	0	1	0	0	1	2	0	0	0	2	0	0	0	0	0	1	0	1	0	2	5
<b>3 Hr Totals</b>	6	21	9	0	36	4	22	0	0	26	5	0	6	0	11	8	3	13	0	24	97
<b>1 Hr Totals</b>																					
3:00 - 4:00	4	5	4	0	13	0	11	0	0	11	1	0	3	0	4	2	2	5	0	9	37
3:15 - 4:15	3	7	7	0	17	1	9	0	0	10	1	0	0	0	1	2	1	6	0	9	37
3:30 - 4:30	1	9	7	0	17	1	9	0	0	10	0	0	0	0	0	3	1	5	0	9	36
3:45 - 4:45	1	9	5	0	15	1	8	0	0	9	1	0	2	0	3	3	1	5	0	9	36
4:00 - 5:00	1	9	5	0	15	1	7	0	0	8	3	0	2	0	5	3	1	4	0	8	36
4:15 - 5:15	1	8	1	0	10	0	8	0	0	8	3	0	3	0	6	4	0	4	0	8	32
4:30 - 5:30	1	6	0	0	7	0	5	0	0	5	4	0	3	0	7	3	0	4	0	7	26
4:45 - 5:45	1	7	0	0	8	1	6	0	0	7	3	0	1	0	4	3	0	4	0	7	26
5:00 - 6:00	1	7	0	0	8	3	4	0	0	7	1	0	1	0	2	3	0	4	0	7	24
<b>PEAK HOUR</b>																					
<b>4:45 - 5:45</b>	1	7	0	0	8	1	6	0	0	7	3	0	1	0	4	3	0	4	0	7	26

## **BICYCLES TURNING MOVEMENT COUNT - SUMMARY**

Counted by: VCU

Date: February 03, 2015

Tuesday



**Intersection of: S. Jefferson Street**

and: Flannagan Drive - Weller Avenue

**Location:** Roanoke, Virginia

## Weather: Sun

**Weather: Sunny/Cold**

Entered by: SN

**Star Rating:** 4

**PEDESTRIAN AND BICYCLE OBSERVATIONS - SUMMARY**

 Intersection of: S. Jefferson Street  
 and: Flannagan Drive - Weller Avenue  
 Location: Roanoke, Virginia

 Counted by: VCU  
 Date: February 03, 2015  
 Weather: Sunny/Cold  
 Entered by: SN

Tuesday



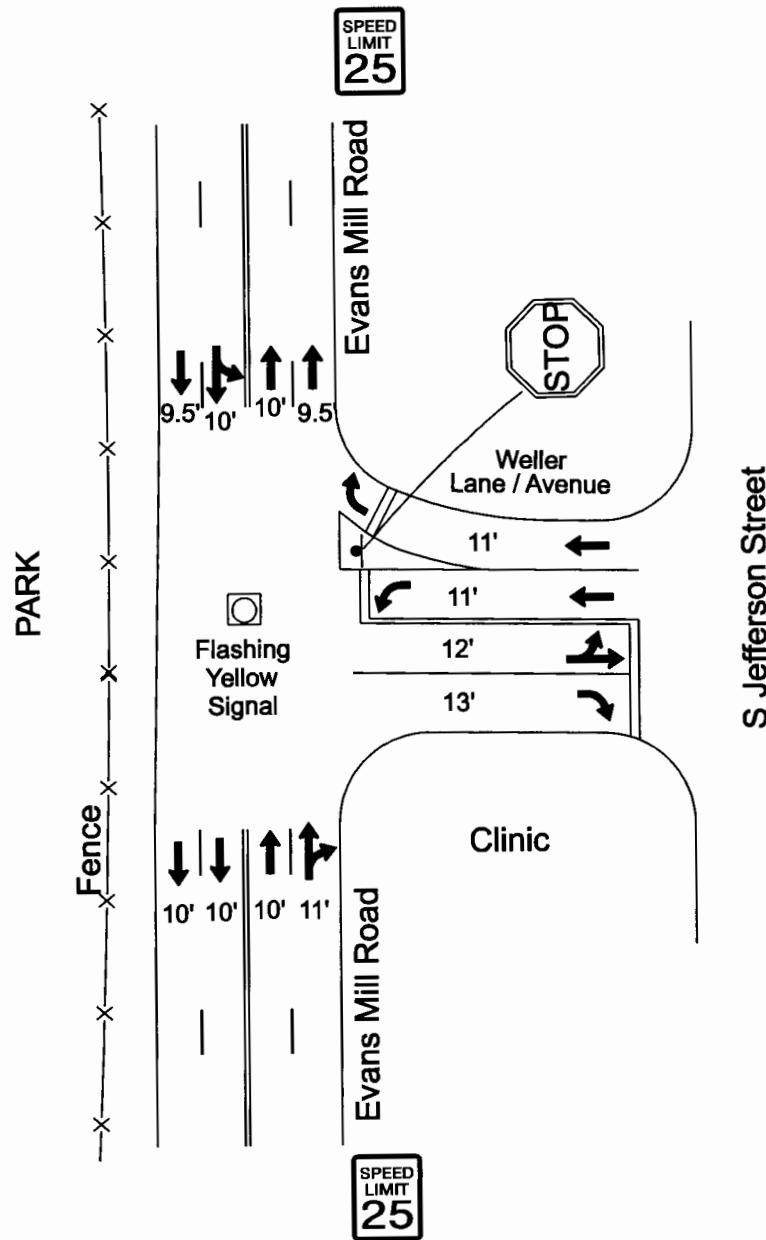
Star Rating: 4

TIME	NORTH LEG S. Jefferson Street		SOUTH LEG S. Jefferson Street	
	Pedestrians	Bicycles	Pedestrians	Bicycles
<b>AM</b>				
6:00 - 6:15	0	0	0	0
6:15 - 6:30	0	0	0	0
6:30 - 6:45	0	0	0	0
6:45 - 7:00	0	0	1	0
7:00 - 7:15	0	0	1	0
7:15 - 7:30	0	0	1	0
7:30 - 7:45	0	0	2	0
7:45 - 8:00	0	0	2	0
8:00 - 8:15	0	0	5	0
8:15 - 8:30	0	0	8	0
8:30 - 8:45	0	0	3	0
8:45 - 9:00	0	0	5	0
<b>TOTALS</b>	0	0	28	0
<b>PM</b>				
3:00 - 3:15	0	0	4	0
3:15 - 3:30	0	0	9	0
3:30 - 3:45	0	0	1	0
3:45 - 4:00	0	0	4	0
4:00 - 4:15	0	0	1	0
4:15 - 4:30	0	0	0	0
4:30 - 4:45	0	0	3	0
4:45 - 5:00	0	0	1	0
5:00 - 5:15	0	0	0	0
5:15 - 5:30	0	0	2	0
5:30 - 5:45	0	0	1	0
5:45 - 6:00	0	0	7	0
<b>TOTALS</b>	0	0	33	0

	EAST LEG Flannagan Drive		WEST LEG Weller Avenue	
	Pedestrians	Bicycles	Pedestrians	Bicycles
<b>AM</b>				
6:00 - 6:15	0	0	0	0
6:15 - 6:30	0	0	0	0
6:30 - 6:45	0	0	0	0
6:45 - 7:00	0	0	0	0
7:00 - 7:15	0	0	0	0
7:15 - 7:30	0	0	0	0
7:30 - 7:45	0	0	0	0
7:45 - 8:00	0	0	0	0
8:00 - 8:15	1	0	0	0
8:15 - 8:30	2	0	0	0
8:30 - 8:45	3	0	0	0
8:45 - 9:00	2	0	0	0
<b>TOTALS</b>	8	0	0	0
<b>PM</b>				
3:00 - 3:15	1	0	0	0
3:15 - 3:30	6	0	0	0
3:30 - 3:45	1	0	0	0
3:45 - 4:00	1	0	0	0
4:00 - 4:15	2	0	0	0
4:15 - 4:30	1	0	0	0
4:30 - 4:45	1	0	0	0
4:45 - 5:00	1	0	1	0
5:00 - 5:15	0	0	0	0
5:15 - 5:30	0	0	0	0
5:30 - 5:45	0	0	1	0
5:45 - 6:00	1	0	0	0
<b>TOTALS</b>	15	0	2	0

**TOTALS TURNING MOVEMENT COUNT - SUMMARY**

Intersection of: S. Jefferson Street and: Flannagan Drive - Weller Avenue Location: Roanoke, Virginia												Counted by: VCU Date: February 03, 2015 Weather: Sunny/Cold Entered by: SN				Tuesday				The Traffic Group						
TIME	TRAFFIC FROM NORTH on: S. Jefferson Street					TRAFFIC FROM SOUTH on: S. Jefferson Street					TRAFFIC FROM EAST on: Flannagan Drive					TRAFFIC FROM WEST on: Weller Avenue					TOTAL N + S + E + W					
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
<b>AM</b>																										
6:00 - 6:15	3	2	7	0	12	8	15	2	0	25	1	0	1	0	2	0	3	0	0	3	42					
6:15 - 6:30	17	8	12	0	37	13	22	0	0	35	5	0	1	0	6	3	7	1	0	11	89					
6:30 - 6:45	9	10	17	0	36	35	34	0	0	69	1	3	2	0	6	3	9	1	0	13	124					
6:45 - 7:00	10	18	8	0	36	17	39	1	0	57	1	0	3	0	4	5	4	8	0	17	114					
7:00 - 7:15	7	13	13	0	33	14	45	0	0	59	6	2	1	0	9	3	9	7	0	19	120					
7:15 - 7:30	15	29	13	0	57	12	63	1	0	76	6	2	6	0	14	8	12	8	0	28	175					
7:30 - 7:45	15	28	10	0	53	12	91	0	0	103	6	6	8	0	20	5	8	11	0	24	200					
7:45 - 8:00	24	38	9	0	71	12	120	4	0	136	3	1	2	0	6	9	10	7	0	26	239					
8:00 - 8:15	25	25	12	0	62	15	89	5	0	109	4	0	3	0	7	6	5	7	0	18	196					
8:15 - 8:30	20	32	12	0	64	7	96	1	0	104	9	1	5	0	15	10	12	12	0	34	217					
8:30 - 8:45	19	36	15	0	70	4	87	2	0	93	5	0	2	0	7	6	6	8	0	20	190					
8:45 - 9:00	20	28	13	0	61	7	77	1	0	85	7	2	4	0	13	4	4	14	0	22	181					
<b>3 Hr Totals</b>	<b>184</b>	<b>267</b>	<b>141</b>	<b>0</b>	<b>592</b>	<b>156</b>	<b>778</b>	<b>17</b>	<b>0</b>	<b>951</b>	<b>54</b>	<b>17</b>	<b>38</b>	<b>0</b>	<b>109</b>	<b>62</b>	<b>89</b>	<b>84</b>	<b>0</b>	<b>235</b>	<b>1887</b>					
<b>1 Hr Totals</b>																										
6:00 - 7:00	39	38	44	0	121	73	110	3	0	186	8	3	7	0	18	11	23	10	0	44	369					
6:15 - 7:15	43	49	50	0	142	79	140	1	0	220	13	5	7	0	25	14	29	17	0	60	447					
6:30 - 7:30	41	70	51	0	162	78	181	2	0	261	14	7	12	0	33	19	34	24	0	77	533					
6:45 - 7:45	47	88	44	0	179	55	238	2	0	295	19	10	18	0	47	21	33	34	0	88	609					
7:00 - 8:00	61	108	45	0	214	50	319	5	0	374	21	11	17	0	49	25	39	33	0	97	734					
7:15 - 8:15	79	120	44	0	243	51	363	10	0	424	19	9	19	0	47	28	35	33	0	96	810					
7:30 - 8:30	84	123	43	0	250	46	396	10	0	452	22	8	18	0	48	30	35	37	0	102	852					
7:45 - 8:45	88	131	48	0	267	38	392	12	0	442	21	2	12	0	35	31	33	34	0	98	842					
8:00 - 9:00	84	121	52	0	257	33	349	9	0	391	25	3	14	0	42	26	27	41	0	94	784					
<b>PEAK HOUR</b>																										
<b>7:30 - 8:30</b>	<b>84</b>	<b>123</b>	<b>43</b>	<b>0</b>	<b>250</b>	<b>46</b>	<b>396</b>	<b>10</b>	<b>0</b>	<b>452</b>	<b>22</b>	<b>8</b>	<b>18</b>	<b>0</b>	<b>48</b>	<b>30</b>	<b>35</b>	<b>37</b>	<b>0</b>	<b>102</b>	<b>852</b>					
<b>PM</b>																										
3:00 - 3:15	18	38	12	0	68	11	65	1	0	77	8	4	12	0	24	5	13	16	0	34	203					
3:15 - 3:30	14	39	10	0	63	4	51	1	0	56	15	8	6	0	29	3	8	16	0	27	175					
3:30 - 3:45	15	50	11	0	76	12	67	2	0	81	9	7	5	0	21	3	15	15	0	33	211					
3:45 - 4:00	12	59	16	0	87	7	60	3	0	70	5	2	5	0	12	14	17	13	0	44	213					
4:00 - 4:15	10	44	11	0	65	9	62	4	0	75	8	0	9	0	17	4	17	19	0	40	197					
4:15 - 4:30	8	45	12	0	65	9	61	2	0	72	6	2	8	0	16	10	9	16	0	35	188					
4:30 - 4:45	5	59	9	0	73	6	57	3	0	66	6	2	11	0	19	10	6	21	0	37	195					
4:45 - 5:00	15	67	11	0	93	6	46	1	0	53	10	2	4	0	16	16	14	18	0	48	210					
5:00 - 5:15	15	81	9	0	105	6	58	1	0	65	10	2	5	0	17	19	15	15	0	49	236					
5:15 - 5:30	12	71	6	0	89	3	64	0	0	67	8	0	10	0	18	8	6	11	0	25	199					
5:30 - 5:45	12	78	11	0	101	8	53	2	0	63	2	2	6	0	10	12	8	7	0	27	201					
5:45 - 6:00	4	56	14	0	74	13	48	0	0	61	4	1	3	0	8	11	5	7	0	23	166					
<b>3 Hr Totals</b>	<b>140</b>	<b>687</b>	<b>132</b>	<b>0</b>	<b>959</b>	<b>94</b>	<b>692</b>	<b>20</b>	<b>0</b>	<b>806</b>	<b>91</b>	<b>32</b>	<b>84</b>	<b>0</b>	<b>207</b>	<b>115</b>	<b>133</b>	<b>174</b>	<b>0</b>	<b>422</b>	<b>2394</b>					
<b>1 Hr Totals</b>																										
3:00 - 4:00	59	186	49	0	294	34	243	7	0	284	37	21	28	0	86	25	53	60	0	138	802					
3:15 - 4:15	51	192	48	0	291	32	240	10	0	282	37	17	25	0	79	24	57	63	0	144	796					
3:30 - 4:30	45	198	50	0	293	37	250	11	0	298	28	11	27	0	66	31	58	63	0	152	809					
3:45 - 4:45	35	207	48	0	290	31	240	12	0	283	25	6	33	0	64	38	49	69	0	156	793					
4:00 - 5:00	38	215	43	0	296	30	226	10	0	266	30	6	32	0	68	40	46	74	0	160	790					
4:15 - 5:15	43	252	41	0	336	27	222	7	0	256	32	8	28	0	68	55	44	70	0	169	829					
4:30 - 5:30	47	278	35	0	360	21	225	5	0	251	34	6	30	0	70	53	41	65	0	159	840					
4:45 - 5:45	54	297	37	0	388	23	221	4	0	248	30	6	25	0	61	55	43	51	0	149	846					
<b>5:00 - 6:00</b>	<b>43</b>	<b>286</b>	<b>40</b>	<b>0</b>	<b>369</b>	<b>30</b>	<b>223</b>	<b>3</b>	<b>0</b>	<b>256</b>	<b>24</b>	<b>5</b>	<b>24</b>	<b>0</b>	<b>53</b>	<b>50</b>	<b>34</b>	<b>40</b>	<b>0</b>	<b>124</b>	<b>802</b>					
<b>PEAK HOUR</b>																										
<b>4:45 - 5:45</b>	<b>54</b>	<b>297</b>	<b>37</b>	<b>0</b>	<b>388</b>	<b>23</b>	<b>221</b>	<b>4</b>	<b>0</b>	<b>248</b>	<b>30</b>	<b>6</b>	<b>25</b>	<b>0</b>	<b>61</b>	<b>55</b>	<b>43</b>	<b>51</b>	<b>0</b>	<b>149</b>	<b>846</b>					



Evans Mill Road  
at  
Weller Avenue

FIELD WORK BY: JW/JH JOB NO.: 2015-0106

DRAWN BY: PRD

DGN NAME: Evans Mill Road at Weller.dgn

DATE: February 10, 2015

LOCATION: Roanoke, VA

SCALE: N/A

SHEET NO.: 1 OF 3

**CARS TURNING MOVEMENT COUNT - SUMMARY**

Counted by: VCU

Date: February 03, 2015

Tuesday



Intersection of: Evans Mill Road

Weather: Sunny/Cold

Star Rating: 4

and: Weller Avenue

Entered by: SN

Location: Roanoke, Virginia

TIME	TRAFFIC FROM NORTH on: Evans Mill Road					TRAFFIC FROM SOUTH on: Evans Mill Road					TRAFFIC FROM EAST on: Weller Avenue					TRAFFIC FROM WEST					TOTAL N + S + E + W	
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL		
<b>AM</b>																						
6:00 - 6:15	0	19	1	0	20	2	21	0	0	23	2	0	3	0	5	0	0	0	0	0	48	
6:15 - 6:30	0	25	7	0	32	2	63	0	0	65	13	0	4	0	17	0	0	0	0	0	114	
6:30 - 6:45	0	30	9	0	39	3	79	0	0	82	3	0	6	0	9	0	0	0	0	0	130	
6:45 - 7:00	0	19	10	0	29	6	58	0	0	64	5	0	7	0	12	0	0	0	0	0	105	
7:00 - 7:15	0	46	13	0	59	6	52	0	0	58	3	0	5	0	8	0	0	0	0	0	125	
7:15 - 7:30	0	104	13	0	117	11	57	0	0	68	2	0	17	0	19	0	0	0	0	0	204	
7:30 - 7:45	0	95	9	0	104	13	55	0	0	68	4	0	15	0	19	0	0	0	0	0	191	
7:45 - 8:00	0	72	9	0	81	13	56	0	0	69	8	0	18	0	26	0	0	0	0	0	176	
8:00 - 8:15	0	80	5	0	85	12	37	0	0	49	8	0	22	0	30	0	0	0	0	0	164	
8:15 - 8:30	0	55	14	0	69	16	23	0	0	39	5	0	16	0	21	0	0	0	0	0	129	
8:30 - 8:45	0	42	10	0	52	11	29	0	0	40	1	0	19	0	20	0	0	0	0	0	112	
8:45 - 9:00	0	40	7	0	47	12	27	0	0	39	8	0	14	0	22	0	0	0	0	0	108	
<b>3 Hr Totals</b>	0	627	107	0	734	107	557	0	0	664	62	0	146	0	208	0	0	0	0	0	1606	
<b>1 Hr Totals</b>																						
6:00 - 7:00	0	93	27	0	120	13	221	0	0	234	23	0	20	0	43	0	0	0	0	0	397	
6:15 - 7:15	0	120	39	0	159	17	252	0	0	269	24	0	22	0	46	0	0	0	0	0	474	
6:30 - 7:30	0	199	45	0	244	26	246	0	0	272	13	0	35	0	48	0	0	0	0	0	564	
6:45 - 7:45	0	264	45	0	309	36	222	0	0	258	14	0	44	0	58	0	0	0	0	0	625	
7:00 - 8:00	0	317	44	0	361	43	220	0	0	263	17	0	55	0	72	0	0	0	0	0	696	
7:15 - 8:15	0	351	36	0	387	49	205	0	0	254	22	0	72	0	94	0	0	0	0	0	735	
7:30 - 8:30	0	302	37	0	339	54	171	0	0	225	25	0	71	0	96	0	0	0	0	0	660	
7:45 - 8:45	0	249	38	0	287	52	145	0	0	197	22	0	75	0	97	0	0	0	0	0	581	
8:00 - 9:00	0	217	36	0	253	51	116	0	0	167	22	0	71	0	93	0	0	0	0	0	513	
<b>PEAK HOUR</b>	<b>7:15 - 8:15</b>	0	351	36	0	387	49	205	0	0	254	22	0	72	0	94	0	0	0	0	0	735
<b>PM</b>																						
3:00 - 3:15	0	68	15	0	83	18	23	0	0	41	4	0	20	0	24	0	0	0	0	0	148	
3:15 - 3:30	0	90	12	0	102	13	30	0	0	43	3	0	18	0	21	0	0	0	0	0	166	
3:30 - 3:45	0	81	16	0	97	15	30	0	0	45	4	0	18	0	22	0	0	0	0	0	164	
3:45 - 4:00	0	76	27	0	103	13	32	0	0	45	5	0	13	0	18	0	0	0	0	0	166	
4:00 - 4:15	0	106	20	0	126	22	33	0	0	55	1	0	13	0	14	0	0	0	0	0	195	
4:15 - 4:30	0	86	18	0	104	14	43	0	0	57	3	0	10	0	13	0	0	0	0	0	174	
4:30 - 4:45	0	101	18	0	119	18	32	0	0	50	3	0	7	0	10	0	0	0	0	0	179	
4:45 - 5:00	0	75	21	0	96	18	26	0	0	44	5	0	13	0	18	0	0	0	0	0	158	
5:00 - 5:15	0	99	30	0	129	17	43	0	0	60	4	0	13	0	17	0	0	0	0	0	206	
5:15 - 5:30	0	108	16	0	124	8	43	0	0	51	1	0	10	0	11	0	0	0	0	0	186	
5:30 - 5:45	0	82	18	0	100	6	33	0	0	39	3	0	15	0	18	0	0	0	0	0	157	
5:45 - 6:00	0	60	15	0	75	7	31	0	0	38	2	0	3	0	5	0	0	0	0	0	118	
<b>3 Hr Totals</b>	0	1032	226	0	1258	169	399	0	0	568	38	0	153	0	191	0	0	0	0	0	2017	
<b>1 Hr Totals</b>																						
3:00 - 4:00	0	315	70	0	385	59	115	0	0	174	16	0	69	0	85	0	0	0	0	0	644	
3:15 - 4:15	0	353	75	0	428	63	125	0	0	188	13	0	62	0	75	0	0	0	0	0	691	
3:30 - 4:30	0	349	81	0	430	64	138	0	0	202	13	0	54	0	67	0	0	0	0	0	699	
3:45 - 4:45	0	369	83	0	452	67	140	0	0	207	12	0	43	0	55	0	0	0	0	0	714	
4:00 - 5:00	0	368	77	0	445	72	134	0	0	206	12	0	43	0	55	0	0	0	0	0	706	
4:15 - 5:15	0	361	87	0	448	67	144	0	0	211	15	0	43	0	58	0	0	0	0	0	717	
4:30 - 5:30	0	383	85	0	468	61	144	0	0	205	13	0	43	0	56	0	0	0	0	0	729	
4:45 - 5:45	0	364	85	0	449	49	145	0	0	194	13	0	51	0	64	0	0	0	0	0	707	
5:00 - 6:00	0	349	79	0	428	38	150	0	0	188	10	0	41	0	51	0	0	0	0	0	667	
<b>PEAK HOUR</b>	<b>4:30 - 5:30</b>	0	383	85	0	468	61	144	0	0	205	13	0	43	0	56	0	0	0	0	0	729

**HEAVY TRUCKS TURNING MOVEMENT COUNT - SUMMARY**

 Intersection of: Evans Mill Road  
 and: Weller Avenue  
 Location: Roanoke, Virginia

Counted by: VCU

Date: February 03, 2015

Tuesday



Weather: Sunny/Cold

Entered by: SN

Star Rating: 4

TIME	TRAFFIC FROM NORTH on: Evans Mill Road					TRAFFIC FROM SOUTH on: Evans Mill Road					TRAFFIC FROM EAST on: Weller Avenue					TRAFFIC FROM WEST					TOTAL N + S E + W
	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	RIGHT	THRU	LEFT	U-TN	TOTAL	
<b>AM</b>																					
6:00 - 6:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 - 6:30	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
6:30 - 6:45	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0
6:45 - 7:00	0	4	1	0	5	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	6
7:00 - 7:15	0	1	0	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
7:15 - 7:30	0	1	1	0	2	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	5
7:30 - 7:45	0	1	0	0	1	3	0	0	0	3	0	0	2	0	2	0	0	0	0	0	6
7:45 - 8:00	0	0	1	0	1	1	0	0	0	1	0	0	1	0	1	0	0	0	0	0	3
8:00 - 8:15	0	2	0	0	2	1	0	0	0	1	1	0	1	0	2	0	0	0	0	0	5
8:15 - 8:30	0	1	2	0	3	1	0	0	0	1	0	0	2	0	2	0	0	0	0	0	6
8:30 - 8:45	0	1	0	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
8:45 - 9:00	0	2	1	0	3	1	0	0	0	1	0	0	2	0	2	0	0	0	0	0	6
<b>3 Hr Totals</b>	0	13	7	0	20	12	0	0	0	12	1	0	10	0	11	0	0	0	0	0	43
<b>1 Hr Totals</b>																					
6:00 - 7:00	0	4	2	0	6	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	8
6:15 - 7:15	0	5	2	0	7	1	0	0	0	1	0	0	2	0	2	0	0	0	0	0	10
6:30 - 7:30	0	6	2	0	8	4	0	0	0	4	0	0	2	0	2	0	0	0	0	0	14
6:45 - 7:45	0	7	2	0	9	7	0	0	0	7	0	0	3	0	3	0	0	0	0	0	19
7:00 - 8:00	0	3	2	0	5	8	0	0	0	8	0	0	3	0	3	0	0	0	0	0	16
7:15 - 8:15	0	4	2	0	6	8	0	0	0	8	1	0	4	0	5	0	0	0	0	0	19
7:30 - 8:30	0	4	3	0	7	6	0	0	0	6	1	0	6	0	7	0	0	0	0	0	20
7:45 - 8:45	0	4	3	0	7	4	0	0	0	4	1	0	4	0	5	0	0	0	0	0	16
8:00 - 9:00	0	6	3	0	9	4	0	0	0	4	1	0	5	0	6	0	0	0	0	0	19
<b>PEAK HOUR</b>																					
<b>7:15 - 8:15</b>	0	4	2	0	6	8	0	0	0	8	1	0	4	0	5	0	0	0	0	0	19
<b>PM</b>																					
3:00 - 3:15	0	4	0	0	4	1	3	0	0	4	0	0	2	0	2	0	0	0	0	0	10
3:15 - 3:30	0	3	0	0	3	2	1	0	0	3	0	0	1	0	1	0	0	0	0	0	7
3:30 - 3:45	0	3	1	0	4	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	5
3:45 - 4:00	0	1	1	0	2	2	1	0	0	3	0	0	0	0	0	0	0	0	0	0	5
4:00 - 4:15	0	1	0	0	1	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	2
4:15 - 4:30	0	1	1	0	2	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	3
4:30 - 4:45	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
4:45 - 5:00	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
5:00 - 5:15	0	0	0	0	0	1	0	0	0	1	0	0	1	0	1	0	0	0	0	0	2
5:15 - 5:30	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
5:30 - 5:45	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
5:45 - 6:00	0	0	1	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
<b>3 Hr Totals</b>	0	13	7	0	20	14	5	0	0	19	0	0	5	0	5	0	0	0	0	0	44
<b>1 Hr Totals</b>																					
3:00 - 4:00	0	11	2	0	13	6	5	0	0	11	0	0	3	0	3	0	0	0	0	0	27
3:15 - 4:15	0	8	2	0	10	5	2	0	0	7	0	0	2	0	2	0	0	0	0	0	19
3:30 - 4:30	0	6	3	0	9	4	1	0	0	5	0	0	1	0	1	0	0	0	0	0	15
3:45 - 4:45	0	3	3	0	6	4	1	0	0	5	0	0	1	0	1	0	0	0	0	0	12
4:00 - 5:00	0	2	3	0	5	3	0	0	0	3	0	0	1	0	1	0	0	0	0	0	9
4:15 - 5:15	0	1	3	0	4	4	0	0	0	4	0	0	1	0	1	0	0	0	0	0	9
4:30 - 5:30	0	0	2	0	2	5	0	0	0	5	0	0	1	0	1	0	0	0	0	0	8
4:45 - 5:45	0	0	2	0	2	5	0	0	0	5	0	0	1	0	1	0	0	0	0	0	8
5:00 - 6:00	0	0	2	0	2	5	0	0	0	5	0	0	1	0	1	0	0	0	0	0	8
<b>PEAK HOUR</b>	0	0	2	0	2	5	0	0	0	5	0	0	1	0	1	0	0	0	0	0	8
<b>4:30 - 5:30</b>	0	0	2	0	2	5	0	0	0	5	0	0	1	0	1	0	0	0	0	0	8

## **BICYCLES TURNING MOVEMENT COUNT - SUMMARY**

Counted by: VCU

Date: February 03, 2015

Tuesday



**Intersection of: Evans Mill Road**

and: Weller Avenue

**Location:** Roanoke, Virginia

## Weather: Su

red by: SN

**Entered by:** SN **Star Rating:** 4

**Star Rating:**

**PEDESTRIAN AND BICYCLE OBSERVATIONS - SUMMARY**

Intersection of: Evans Mill Road  
and: Weller Avenue  
Location: Roanoke, Virginia

Counted by: VCU  
Date: February 03, 2015  
Weather: Sunny/Cold  
Entered by: SN

Tuesday



Star Rating: 4

TIME	NORTH LEG Evans Mill Road		SOUTH LEG Evans Mill Road	
	Pedestrians	Bicycles	Pedestrians	Bicycles
<b>AM</b>				
6:00 - 6:15	0	0	0	0
6:15 - 6:30	0	0	0	0
6:30 - 6:45	0	0	0	0
6:45 - 7:00	0	0	0	0
7:00 - 7:15	0	0	0	0
7:15 - 7:30	0	0	0	0
7:30 - 7:45	0	0	0	0
7:45 - 8:00	0	0	0	0
8:00 - 8:15	0	0	0	0
8:15 - 8:30	0	0	0	0
8:30 - 8:45	0	0	0	0
8:45 - 9:00	0	0	0	0
<b>TOTALS</b>	0	0	0	0
<b>PM</b>				
3:00 - 3:15	0	0	0	0
3:15 - 3:30	0	0	0	0
3:30 - 3:45	0	0	0	0
3:45 - 4:00	0	0	0	0
4:00 - 4:15	0	0	0	0
4:15 - 4:30	0	0	0	0
4:30 - 4:45	0	0	0	0
4:45 - 5:00	0	0	0	0
5:00 - 5:15	0	0	0	0
5:15 - 5:30	0	0	0	0
5:30 - 5:45	0	0	0	0
5:45 - 6:00	0	0	0	0
<b>TOTALS</b>	0	0	0	0
	EAST LEG Weller Avenue		WEST LEG	
	Pedestrians	Bicycles	Pedestrians	Bicycles
<b>AM</b>				
6:00 - 6:15	0	0		
6:15 - 6:30	0	0		
6:30 - 6:45	0	0		
6:45 - 7:00	1	0		
7:00 - 7:15	0	0		
7:15 - 7:30	0	0		
7:30 - 7:45	0	0		
7:45 - 8:00	0	0		
8:00 - 8:15	0	0		
8:15 - 8:30	0	0		
8:30 - 8:45	0	0		
8:45 - 9:00	1	0	0	0
<b>TOTALS</b>	2	0	0	0
<b>PM</b>				
3:00 - 3:15	4	0		
3:15 - 3:30	1	0		
3:30 - 3:45	2	0		
3:45 - 4:00	0	0		
4:00 - 4:15	0	0		
4:15 - 4:30	1	0		
4:30 - 4:45	4	0		
4:45 - 5:00	0	0		
5:00 - 5:15	1	0		
5:15 - 5:30	0	0		
5:30 - 5:45	1	0		
5:45 - 6:00	1	0		
<b>TOTALS</b>	15	0	0	0

## **TOTALS TURNING MOVEMENT COUNT - SUMMARY**

Counted by: VCU

Date: February 03, 2015

Tuesday



**Intersection of: Evans Mill Road  
and: Weller Avenue**

Entered by: SN

**Entered by:** SN

TBA

#### **TRAFFIC FROM**

#### **TRAFFIC FROM**

**Intersection Traffic Count Data**  
 South Jefferson Street & Reserve Avenue  
 Roanoke, VA  
 Date of Count: May 30, 2012

Start Time	End Time	Eastbound (Reserve Ave.)			Westbound (Reserve Ave.)			Northbound (S. Jefferson St.)			Southbound (S. Jefferson St.)			Intx Total	Heavy Veh	%
		Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right			
6:30 AM	6:45 AM	17	11	0	0	2	10	1	25	2	88	32	10	198	2	1.0%
6:45 AM	7:00 AM	12	3	0	0	1	6	0	19	0	46	28	13	128	0	0.0%
7:00 AM	7:15 AM	28	4	0	0	3	14	1	36	0	27	27	24	164	7	4.3%
7:15 AM	7:30 AM	33	6	0	0	12	44	4	46	0	34	50	27	256	6	2.3%
7:30 AM	7:45 AM	49	14	7	0	5	43	7	71	1	29	44	31	301	11	3.7%
7:45 AM	8:00 AM	61	10	4	0	12	22	11	104	0	36	66	28	354	9	2.5%
8:00 AM	8:15 AM	53	1	3	0	4	27	1	62	1	44	67	47	310	7	2.3%
8:15 AM	8:30 AM	40	3	4	0	6	22	4	69	1	40	62	54	305	7	2.3%
<b>AM PEAK HOUR 7:30-8:30</b>		<b>203</b>	<b>38</b>	<b>3</b>	<b>27</b>	<b>111</b>	<b>33</b>	<b>3</b>	<b>305</b>	<b>3</b>	<b>149</b>	<b>239</b>	<b>50</b>	<b>1270</b>	<b>30</b>	<b>2.2%</b>
<b>PM PEAK HOUR 4:00-5:00</b>		<b>0183</b>	<b>650</b>	<b>624</b>	<b>N/A</b>	<b>056</b>	<b>0168</b>	<b>N/A</b>	<b>0174</b>	<b>075</b>	<b>0185</b>	<b>0185</b>	<b>074</b>	<b>1270</b>	<b>0</b>	<b>0.0%</b>
3:30 PM	3:45 PM	47	5	6	1	7	49	2	64	0	12	77	43	313	7	2.2%
3:45 PM	4:00 PM	52	3	7	0	7	31	1	60	0	12	59	41	273	8	2.9%
4:00 PM	4:15 PM	47	4	5	0	7	49	4	56	0	10	76	64	322	8	2.5%
4:15 PM	4:30 PM	42	3	9	0	3	34	3	51	1	14	69	48	277	5	1.8%
4:30 PM	4:45 PM	42	5	3	0	9	45	0	62	0	16	80	57	319	6	1.9%
4:45 PM	5:00 PM	44	5	8	1	11	42	2	54	0	20	82	55	324	6	1.9%
5:00 PM	5:15 PM	38	4	4	2	6	43	3	56	0	17	98	80	351	6	1.7%
5:15 PM	5:30 PM	53	10	5	0	6	39	2	47	0	21	84	66	333	4	1.2%
<b>PM PEAK HOUR 4:00-5:00</b>		<b>1270</b>	<b>650</b>	<b>624</b>	<b>3</b>	<b>32</b>	<b>155</b>	<b>7</b>	<b>215</b>	<b>0</b>	<b>52</b>	<b>52</b>	<b>32</b>	<b>1270</b>	<b>0</b>	<b>0.0%</b>
<b>PEAK HOUR TOTAL</b>		<b>0183</b>	<b>650</b>	<b>624</b>	<b>3</b>	<b>27</b>	<b>111</b>	<b>33</b>	<b>305</b>	<b>3</b>	<b>149</b>	<b>239</b>	<b>50</b>	<b>1270</b>	<b>0</b>	<b>0.0%</b>

**APPENDIX C**  
Synchro Reports

Lanes, Volumes, Timings  
3: Jefferson/Jefferson St & McClanahan St/Yellow Mountain Rd

2015 Existing AM

3/26/2015

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	180	20	30	5	140	80	25	185	5	15	60	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	10	10	10	12	16	12	11	11	10
Grade (%)					-6%			-4%			4%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						1.00	0.97		0.99		1.00	0.91
Frt						0.850		0.997				0.850
Flt Protected					0.998			0.994			0.990	
Satd. Flow (prot)	0	1573	0	0	1609	1397	0	1720	0	0	1542	1278
Flt Permitted		0.672			0.989			0.963			0.923	
Satd. Flow (perm)	0	1092	0	0	1594	1356	0	1654	0	0	1433	1163
Right Turn on Red			No			Yes			Yes			Yes
Satd. Flow (RTOR)					87			2				103
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		368			600			400			744	
Travel Time (s)		8.4			13.6			9.1			16.9	
Confli. Peds. (#/hr)	6		13	13		6	45		16	16		45
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	0%	6%	0%	2%	0%	6%	2%	0%	8%	3%	4%
Parking (#/hr)	0	0	0				0	0	0			
Adj. Flow (vph)	196	22	33	5	152	87	27	201	5	16	65	103
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	251	0	0	157	87	0	233	0	0	81	103
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(ft)	0				0			0			0	
Link Offset(ft)	0				0			0			0	
Crosswalk Width(ft)	16				16			16			16	
Two way Left Turn Lane												
Headway Factor	1.16	1.13	1.16	1.20	1.20	1.20	1.12	1.09	1.12	1.22	1.22	1.28
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm

## Lanes, Volumes, Timings

3: Jefferson/Jefferson St &amp; McClanahan St/Yellow Mountain Rd

2015 Existing AM

3/26/2015



Lane Group	EBL	EBT	EBC	WBL	WBT	WBC	NBL	NBT	NBC	SLB	SBT	SBC
Protected Phases		4			8			2			6	
Permitted Phases	4				8		8	2		6		6
Detector Phase	4	4		8	8		8	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	12.0	12.0		12.0	12.0		12.0	12.0		12.0	12.0	12.0
Minimum Split (s)	31.0	31.0		31.0	31.0		31.0	31.0		31.0	31.0	31.0
Total Split (s)	43.0	43.0		43.0	43.0		43.0	37.0	37.0	37.0	37.0	37.0
Total Split (%)	53.8%	53.8%		53.8%	53.8%		53.8%	46.3%	46.3%	46.3%	46.3%	46.3%
Maximum Green (s)	37.0	37.0		37.0	37.0		37.0	31.0	31.0	31.0	31.0	31.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0				0.0		0.0		0.0		0.0	0.0
Total Lost Time (s)	6.0				6.0		6.0		6.0		6.0	6.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	4.5
Recall Mode	None	None		None	None		None	Min	Min	Min	Min	Min
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	18.0	18.0		18.0	18.0		18.0	18.0		18.0	18.0	18.0
Pedestrian Calls (#/hr)	19	19		19	19		61	61		61	61	61
Act Effct Green (s)	18.8			18.8	18.8			19.4			19.4	19.4
Actuated g/C Ratio	0.37			0.37	0.37			0.38			0.38	0.38
v/c Ratio	0.62			0.27	0.16			0.37			0.15	0.20
Control Delay	21.9			13.5	3.9			14.2			12.4	4.5
Queue Delay	0.0			0.0	0.0			0.0			0.0	0.0
Total Delay	21.9			13.5	3.9			14.2			12.4	4.5
LOS	C			B	A			B			B	A
Approach Delay	21.9			10.1				14.2			8.0	
Approach LOS	C			B				B			A	

## Intersection Summary

Area Type: CBD

Cycle Length: 80

Actuated Cycle Length: 50.9

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.62

Intersection Signal Delay: 14.0

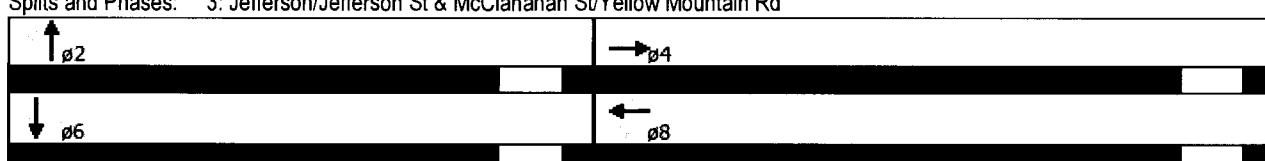
Intersection LOS: B

Intersection Capacity Utilization 63.6%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 3: Jefferson/Jefferson St &amp; McClanahan St/Yellow Mountain Rd



HCM 2010 Signalized Intersection Summary  
3: Jefferson/Jefferson St & McClanahan St/Yellow Mountain Rd

2015 Existing AM  
3/26/2015

Movement	EBL	EBT	EBC	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	180	20	30	5	140	80	25	185	5	15	60	95
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.98	0.99		0.98	0.95		0.94	0.96		0.94
Parking Bus, Adj	1.00	1.00	0.90	1.00	1.00	1.00	1.00	1.00	0.90	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1693	1707	1693	1761	1728	1761	1744	1771	1744	1676	1612	1611
Adj Flow Rate, veh/h	196	22	33	5	152	87	27	201	5	16	65	103
Adj No. of Lanes	0	1	0	0	1	1	0	1	0	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	2	2	0	2	2	2	3	3	4
Cap, veh/h	397	45	48	78	697	600	109	507	12	146	474	459
Arrive On Green	0.41	0.41	0.41	0.41	0.41	0.41	0.36	0.36	0.36	0.36	0.36	0.36
Sat Flow, veh/h	666	110	118	12	1711	1473	83	1419	33	173	1325	1283
Grp Volume(v), veh/h	251	0	0	157	0	87	233	0	0	81	0	103
Grp Sat Flow(s), veh/h/ln	894	0	0	1723	0	1473	1535	0	0	1498	0	1283
Q Serve(g_s), s	10.0	0.0	0.0	0.0	0.0	1.9	0.0	0.0	0.0	0.0	0.0	2.9
Cycle Q Clear(g_c), s	13.1	0.0	0.0	3.0	0.0	1.9	5.6	0.0	0.0	1.7	0.0	2.9
Prop In Lane	0.78		0.13	0.03		1.00	0.12		0.02	0.20		1.00
Lane Grp Cap(c), veh/h	490	0	0	774	0	600	627	0	0	620	0	459
V/C Ratio(X)	0.51	0.00	0.00	0.20	0.00	0.15	0.37	0.00	0.00	0.13	0.00	0.22
Avail Cap(c_a), veh/h	808	0	0	1319	0	1070	999	0	0	978	0	781
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.6	0.0	0.0	9.9	0.0	9.5	12.3	0.0	0.0	11.1	0.0	11.4
Incr Delay (d2), s/veh	1.4	0.0	0.0	0.2	0.0	0.2	0.6	0.0	0.0	0.2	0.0	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	3.2	0.0	0.0	1.5	0.0	0.8	2.6	0.0	0.0	0.8	0.0	1.1
LnGrp Delay(d), s/veh	15.0	0.0	0.0	10.1	0.0	9.7	13.0	0.0	0.0	11.2	0.0	11.9
LnGrp LOS	B			B		A	B			B		B
Approach Vol, veh/h	251			244			233			184		
Approach Delay, s/veh	15.0			9.9			13.0			11.6		
Approach LOS	B			A			B			B		

Timer	1	2	3	4	5	6	7	8
Assigned Phs	2		4		6		8	
Phs Duration (G+Y+Rc), s	24.2		26.7		24.2		26.7	
Change Period (Y+Rc), s	6.0		6.0		6.0		6.0	
Max Green Setting (Gmax), s	31.0		37.0		31.0		37.0	
Max Q Clear Time (g_c+l1), s	7.6		15.1		4.9		5.0	
Green Ext Time (p_c), s	3.8		4.8		3.9		5.5	

Intersection Summary

HCM 2010 Ctrl Delay                    12.4  
HCM 2010 LOS                            B

<b>Approach</b>	<b>ES</b>	<b>WB</b>	<b>NB</b>	<b>SB</b>
Crosswalk Length (ft)	29.6	32.0	28.2	38.3
Crosswalk Width (ft)	12.0	12.0	12.0	12.0
Total Number of Lanes Crossed	2	3	2	3
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	6	2	4	8
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (mph)	30	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-	-
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-	-
Pedestrian Delay (s/p)	40.0	40.0	40.0	40.0
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	1.98	2.04	1.88	2.16
Pedestrian Crosswalk LOS	A	B	A	B

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Two Way Analysis cannot be performed on Signalized Intersection.

Lanes, Volumes, Timings  
6: Jefferson St & Weller Ave/Flannagan Dr

2015 Existing AM  
3/26/2015

Lane Group	E BL	E BT	E BR	W BL	W BT	W BR	N BL	N BT	N BR	S BL	S BT	S BR
Lane Configurations	↑ ↗	↑ ↘	↗ ↙	↖ ↖	↖ ↙	↗ ↖	↑ ↗	↑ ↙	↗ ↖	↑ ↗	↑ ↙	↗ ↖
Volume (vph)	30	40	30	20	10	20	10	395	40	85	120	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	14	14	11	11	12	12	16	12	12	12	12
Grade (%)		0%			-3%			-6%			-5%	
Storage Length (ft)	0		0	0		0	0		80	0		85
Storage Lanes	1		0	0		1	0		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor	0.99			0.99				1.00			1.00	
Frt	0.935					0.850		0.988				0.850
Flt Protected	0.950				0.968			0.999			0.980	
Satd. Flow (prot)	1472	1539	0	0	1557	1475	0	1746	0	0	3163	1433
Flt Permitted	0.736				0.753			0.993			0.713	
Satd. Flow (perm)	1141	1539	0	0	1199	1475	0	1736	0	0	2300	1433
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)	33					41		9				65
Link Speed (mph)	30				30			30			30	
Link Distance (ft)	138				151			744			1530	
Travel Time (s)	3.1				3.4			16.9			34.8	
Confl. Peds. (#/hr)		17	17						3	3		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	14%	9%	10%	0%	13%	0%	20%	1%	0%	2%	4%	4%
Parking (#/hr)								0	0			
Adj. Flow (vph)	33	43	33	22	11	22	11	429	43	92	130	65
Shared Lane Traffic (%)												
Lane Group Flow (vph)	33	76	0	0	33	22	0	483	0	0	222	65
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(ft)	13				13			11			11	
Link Offset(ft)	0				0			0			0	
Crosswalk Width(ft)	16				16			16			16	
Two way Left Turn Lane												
Headway Factor	1.10	1.05	1.05	1.17	1.17	1.12	1.10	1.07	1.10	1.11	1.11	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	

Lanes, Volumes, Timings  
6: Jefferson St & Weller Ave/Flannagan Dr

2015 Existing AM  
3/26/2015



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8	8	8	2			6		6
Detector Phase	4	4		8	8	8	2	2		6	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	12.0	12.0		12.0	12.0	12.0
Minimum Split (s)	31.0	31.0		31.0	31.0	31.0	34.0	34.0		34.0	34.0	34.0
Total Split (s)	33.0	33.0		33.0	33.0	33.0	47.0	47.0		47.0	47.0	47.0
Total Split (%)	41.3%	41.3%		41.3%	41.3%	41.3%	58.8%	58.8%		58.8%	58.8%	58.8%
Maximum Green (s)	27.0	27.0		27.0	27.0	27.0	41.0	41.0		41.0	41.0	41.0
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	4.5	4.5		4.5	4.5	4.5	6.0	6.0		6.0	6.0	6.0
Recall Mode	None	None		None	None	None	Min	Min		Min	Min	Min
Walk Time (s)	7.0	7.0								7.0	7.0	7.0
Flash Dont Walk (s)	18.0	18.0								21.0	21.0	21.0
Pedestrian Calls (#/hr)	17	17								3	3	3
Act Effct Green (s)	10.7	10.7		10.7	10.7	10.7	30.5			30.5	30.5	30.5
Actuated g/C Ratio	0.22	0.22		0.22	0.22	0.22	0.63			0.63	0.63	0.63
v/c Ratio	0.13	0.21		0.12	0.06	0.06	0.44			0.15	0.07	
Control Delay	17.2	11.9		17.1	3.6	3.6	9.6			7.1	2.8	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0			0.0	0.0	
Total Delay	17.2	11.9		17.1	3.6	3.6	9.6			7.1	2.8	
LOS	B	B		B	A	A	A			A	A	
Approach Delay		13.5			11.7		9.6			6.2		
Approach LOS		B		B		A				A		

**Intersection Summary**

Area Type: CBD

Cycle Length: 80

Actuated Cycle Length: 48.6

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.44

Intersection Signal Delay: 9.1

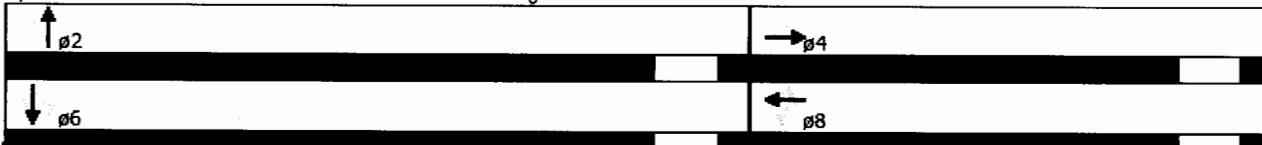
Intersection LOS: A

Intersection Capacity Utilization 65.3%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 6: Jefferson St & Weller Ave/Flannagan Dr



Baseline

thl/msa

Synchro 8 Report

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HCM 2010 Signalized Intersection Summary  
6: Jefferson St & Weller Ave/Flannagan Dr

2015 Existing AM  
3/26/2015

Movement	E BL	E BR	E BR	W BL	W BL	W BR	N BL	N BL	N BR	S BL	S BL	S BL	S BL
Lane Configurations	↑	↑	↑	↓	↓	↑	↔	↔	↔	↑↑	↑↑	↑↑	↑↑
Volume (veh/h)	30	40	30	20	10	20	10	395	40	85	120	60	
Number	7	4	14	3	8	18	5	2	12	1	6	16	
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A <sub>pbT</sub> )	0.96		0.98	0.98		0.96	1.00		1.00	1.00		1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.90	1.00	1.00	1.00	
Adj Sat Flow, veh/h/in	1560	1625	1778	1736	1664	1736	1761	1807	1761	1753	1699	1685	
Adj Flow Rate, veh/h	33	43	33	22	11	22	11	429	43	92	130	65	
Adj No. of Lanes	1	1	0	0	1	1	0	1	0	0	2	1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Percent Heavy Veh, %	14	9	9	13	13	0	1	1	1	4	4	4	
Cap, veh/h	338	174	134	271	106	292	86	766	75	568	780	760	
Arrive On Green	0.21	0.21	0.21	0.21	0.21	0.21	0.53	0.53	0.53	0.53	0.53	0.53	
Sat Flow, veh/h	1107	844	648	680	515	1415	11	1442	142	773	1469	1430	
Grp Volume(v), veh/h	33	0	76	33	0	22	483	0	0	92	130	65	
Grp Sat Flow(s), veh/h/in	1107	0	1492	1195	0	1415	1595	0	0	773	1469	1430	
Q Serve(g_s), s	1.2	0.0	1.9	0.0	0.0	0.6	0.0	0.0	0.0	0.0	2.1	1.0	
Cycle Q Clear(g_c), s	3.2	0.0	1.9	2.0	0.0	0.6	9.3	0.0	0.0	3.4	2.1	1.0	
Prop In Lane	1.00		0.43	0.67		1.00	0.02		0.09	1.00		1.00	
Lane Grp Cap(c), veh/h	338	0	308	378	0	292	928	0	0	568	780	760	
V/C Ratio(X)	0.10	0.00	0.25	0.09	0.00	0.08	0.52	0.00	0.00	0.16	0.17	0.09	
Avail Cap(c_a), veh/h	763	0	880	871	0	835	1504	0	0	873	1316	1281	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Upstream Filter(l)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	
Uniform Delay (d), s/veh	16.5	0.0	15.2	14.7	0.0	14.6	7.2	0.0	0.0	5.8	5.5	5.3	
Incr Delay (d2), s/veh	0.2	0.0	0.7	0.2	0.0	0.2	1.6	0.0	0.0	0.5	0.4	0.2	
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(50%), veh/in	0.4	0.0	0.9	0.4	0.0	0.2	4.4	0.0	0.0	0.7	0.9	0.4	
LnGrp Delay(d), s/veh	16.7	0.0	15.9	14.9	0.0	14.8	8.8	0.0	0.0	6.3	5.9	5.4	
LnGrp LOS	B	B	B	B	A			A	A	A			
Approach Vol, veh/h	109				55			483			287		
Approach Delay, s/veh	16.1				14.9			8.8			5.9		
Approach LOS	B			B			A			A			
Time	1	2	3	4	5	6	7	8					
Assigned Phs	2		4		6		8						
Phs Duration (G+Y+Rc), s	30.3		15.5		30.3		15.5						
Change Period (Y+Rc), s	6.0		6.0		6.0		6.0						
Max Green Setting (Gmax), s	41.0		27.0		41.0		27.0						
Max Q Clear Time (g_c+1), s	11.3		5.2		5.4		4.0						
Green Ext Time (p_c), s	13.1		1.3		14.2		1.3						
<b>Intersection Summary</b>													
HCM 2010 Ctrl Delay			9.1										
HCM 2010 LOS			A										

Approach	EB	WB	NB	SB
Crosswalk Length (ft)	58.2	45.3	47.5	58.4
Crosswalk Width (ft)	12.0	12.0	12.0	12.0
Total Number of Lanes Crossed	4	3	3	4
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	6	2	4	8
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (mph)	30	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-	-
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-	-
Pedestrian Delay (s/p)	40.0	40.0	40.0	40.0
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.18	2.02	2.16	2.32
Pedestrian Crosswalk LOS	B	B	B	B

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Two Way Analysis cannot be performed on Signalized Intersection.

Lanes, Volumes, Timings  
7: Evans Mill Rd & Weller Ave

2015 Existing AM  
3/26/2015



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↓	↑	↑↓			↑↓
Volume (vph)	60	20	170	60	40	305
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	14	15	10	10	10	10
Lane Util. Factor	1.00	1.00	0.95	0.95	0.95	0.95
Fr <sub>t</sub>		0.850	0.961			
Flt Protected	0.950					0.994
Satd. Flow (prot)	1604	1537	2840	0	0	2961
Flt Permitted	0.950					0.994
Satd. Flow (perm)	1604	1537	2840	0	0	2961
Link Speed (mph)	30		30			30
Link Distance (ft)	138		244			240
Travel Time (s)	3.1		5.5			5.5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	8%	4%	0%	10%	8%	1%
Adj. Flow (vph)	65	22	185	65	43	332
Shared Lane Traffic (%)						
Lane Group Flow (vph)	65	22	250	0	0	375
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	14		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.05	1.01	1.25	1.25	1.25	1.25
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

**Intersection Summary**

Area Type: CBD

Control Type: Unsignalized

Intersection Capacity Utilization 31.7%

ICU Level of Service A

Analysis Period (min) 15

**Intersection**

Int Delay, s/veh 2.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	60	20	170	60	40	305
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	8	4	0	10	8	1
Mvmt Flow	65	22	185	65	43	332

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	470	125	0 0 250 0
Stage 1	217	-	-
Stage 2	253	-	-
Critical Hdwy	6.96	6.98	- - 4.26 -
Critical Hdwy Stg 1	5.96	-	-
Critical Hdwy Stg 2	5.96	-	-
Follow-up Hdwy	3.58	3.34	- - 2.28 -
Pot Cap-1 Maneuver	507	896	- - 1270 -
Stage 1	781	-	-
Stage 2	748	-	-
Platoon blocked, %		- -	-
Mov Cap-1 Maneuver	486	896	- - 1270 -
Mov Cap-2 Maneuver	486	-	-
Stage 1	781	-	-
Stage 2	717	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.5	0	1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	486	896	1270	-
HCM Lane V/C Ratio	-	-	0.134	0.024	0.034	-
HCM Control Delay (s)	-	-	13.6	9.1	7.9	0.1
HCM Lane LOS	-	-	B	A	A	A
HCM 95th %tile Q(veh)	-	-	0.5	0.1	0.1	-

Lanes, Volumes, Timings  
11: Jefferson St & Reserve Ave

2015 Existing AM  
3/26/2015

Lane Group	EBL	EBT	EBC	WBL	WBT	WBC	NBL	NBT	NBC	SBL	SBT	SBC
Lane Configurations												
Volume (vph)	210	30	20	0	30	120	50	345	5	155	245	165
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	15	15	12	12	12	11	11	11	11	11	15
Grade (%)		0%			0%			-5%			0%	
Storage Length (ft)	0		0	100		0	100		0	220		80
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	25			100			150			180		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00
Frt		0.940			0.880			0.998				0.850
Flt Protected	0.950						0.950			0.950		
Satd. Flow (prot)	1577	1717	0	1660	1461	0	1563	1642	0	1525	3049	1552
Flt Permitted	0.654						0.551			0.450		
Satd. Flow (perm)	1086	1717	0	1660	1461	0	906	1642	0	722	3049	1552
Right Turn on Red			Yes				Yes			Yes		Yes
Satd. Flow (RTOR)	22				130				1			179
Link Speed (mph)	30				30			30			30	
Link Distance (ft)	551				718			1530			504	
Travel Time (s)	12.5				16.3			34.8			11.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	228	33	22	0	33	130	54	375	5	168	266	179
Shared Lane Traffic (%)												
Lane Group Flow (vph)	228	55	0	0	163	0	54	380	0	168	266	179
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(ft)	12				12			11			11	
Link Offset(ft)	0				0			0			0	
Crosswalk Width(ft)	16				16			16			16	
Two way Left Turn Lane												
Headway Factor	1.14	1.01	1.01	1.14	1.14	1.14	1.16	1.16	1.16	1.19	1.19	1.01
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100		20	100	20
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	Perm

Lanes, Volumes, Timings  
11: Jefferson St & Reserve Ave

2015 Existing AM  
3/26/2015



Lane Group	EPL	EST	EPR	WBL	WBT	WBR	NBL	NBT	NBR	SPL	SPT	CBD
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4				8		2			6		6
Detector Phase	4	4		8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		4.0	30.0		4.0	30.0	30.0
Minimum Split (s)	22.0	22.0		22.0	22.0		18.0	36.0		10.0	36.0	36.0
Total Split (s)	26.0	26.0		26.0	26.0		18.0	38.0		16.0	36.0	36.0
Total Split (%)	32.5%	32.5%		32.5%	32.5%		22.5%	47.5%		20.0%	45.0%	45.0%
Maximum Green (s)	20.0	20.0		20.0	20.0		12.0	32.0		10.0	30.0	30.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Lead/Lag							Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		0.2	6.0		0.2	6.0	6.0
Recall Mode	Max	Max		Max	Max		Max	None		Max	None	None
Walk Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	5.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0			11.0			11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0			0			0	0
Act Effct Green (s)	20.0	20.0		20.0			44.0	32.0		40.0	30.0	30.0
Actuated g/C Ratio	0.25	0.25		0.25			0.55	0.40		0.50	0.38	0.38
v/c Ratio	0.84	0.12		0.35			0.09	0.58		0.36	0.23	0.26
Control Delay	57.1	16.8		9.8			7.2	23.0		10.2	17.8	3.9
Queue Delay	0.0	0.0		0.0			0.0	0.0		0.0	0.0	0.0
Total Delay	57.1	16.8		9.8			7.2	23.0		10.2	17.8	3.9
LOS	E	B		A			A	C		B	B	A
Approach Delay		49.3		9.8				21.1			11.7	
Approach LOS		D		A				C			B	

**Intersection Summary**

Area Type: CBD

Cycle Length: 80

Actuated Cycle Length: 80

Natural Cycle: 80

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 21.3

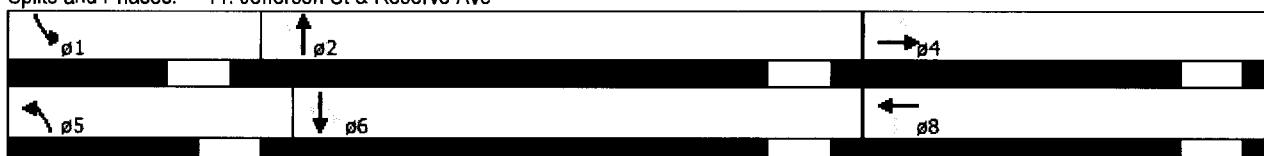
Intersection LOS: C

Intersection Capacity Utilization 77.4%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 11: Jefferson St & Reserve Ave



HCM 2010 Signalized Intersection Summary  
11: Jefferson St & Reserve Ave

2015 Existing AM  
3/26/2015

Movement	EBL	E BT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	ST	SBR
Lane Configurations	↑ ↗	↑ ↘	↗ ↙	↖ ↖	↖ ↗	↙ ↖	↖ ↙	↖ ↗	↙ ↘	↖ ↙	↑ ↗	↖ ↙
Volume (veh/h)	210	30	20	0	30	120	50	345	5	155	245	165
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1660	1727	1778	1660	1660	1710	1702	1702	1753	1660	1660	1727
Adj Flow Rate, veh/h	228	33	22	0	33	130	54	375	5	168	266	0
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	259	242	161	90	74	290	655	670	9	490	1183	550
Arrive On Green	0.25	0.25	0.25	0.00	0.25	0.25	0.15	0.40	0.40	0.13	0.38	0.00
Sat Flow, veh/h	1085	968	645	1197	295	1161	1621	1675	22	1581	3154	1468
Grp Volume(v), veh/h	228	0	55	0	0	163	54	0	380	168	266	0
Grp Sat Flow(s), veh/h/ln	1085	0	1613	1197	0	1455	1621	0	1698	1581	1577	1468
Q Serve(g_s), s	12.4	0.0	2.1	0.0	0.0	7.6	1.3	0.0	13.8	4.8	4.6	0.0
Cycle Q Clear(g_c), s	20.0	0.0	2.1	0.0	0.0	7.6	1.3	0.0	13.8	4.8	4.6	0.0
Prop In Lane	1.00		0.40	1.00		0.80	1.00		0.01	1.00		1.00
Lane Grp Cap(c), veh/h	259	0	403	90	0	364	655	0	679	490	1183	550
V/C Ratio(X)	0.88	0.00	0.14	0.00	0.00	0.45	0.08	0.00	0.56	0.34	0.22	0.00
Avail Cap(c_a), veh/h	259	0	403	90	0	364	655	0	679	490	1183	550
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	35.4	0.0	23.3	0.0	0.0	25.3	9.5	0.0	18.6	12.3	17.1	0.0
Incr Delay (d2), s/veh	32.2	0.0	0.7	0.0	0.0	4.0	0.2	0.0	2.7	1.9	0.3	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	7.3	0.0	1.0	0.0	0.0	3.4	0.6	0.0	6.9	2.3	2.1	0.0
LnGrp Delay(d), s/veh	67.6	0.0	24.0	0.0	0.0	29.3	9.7	0.0	21.2	14.2	17.4	0.0
LnGrp LOS	E		C			C	A		C	B	B	
Approach Vol, veh/h		283			163				434		434	
Approach Delay, s/veh		59.2			29.3				19.8		16.2	
Approach LOS		E			C				B		B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	16.0	38.0		26.0	18.0	36.0		26.0				
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s	10.0	32.0		20.0	12.0	30.0		20.0				
Max Q Clear Time (g_c+l1), s	6.8	15.8		22.0	3.3	6.6		9.6				
Green Ext Time (p_c), s	0.0	7.6		0.0	0.0	9.5		1.7				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			28.3									
HCM 2010 LOS			C									

Approach	E6	WB	NB	S6
Crosswalk Length (ft)	39.1	36.5	46.3	45.1
Crosswalk Width (ft)	12.0	12.0	12.0	12.0
Total Number of Lanes Crossed	3	3	4	4
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	6	2	4	8
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (mph)	30	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-	-
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-	-
Pedestrian Delay (s/p)	40.0	40.0	40.0	40.0
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.12	2.07	2.31	2.46
Pedestrian Crosswalk LOS	B	B	B	B

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Two Way Analysis cannot be performed on Signalized Intersection.

## Lanes, Volumes, Timings

2015 Existing PM

3: Jefferson/Jefferson St &amp; McClanahan St/Yellow Mountain Rd

3/26/2015



Lane Group	EPL	EBT	EBR	WBL	WBT	WBBL	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	180	150	20	5	60	10	60	70	5	70	135	175
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	10	10	10	12	16	12	11	11	10
Grade (%)					-6%				-4%			4%
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99			1.00	0.97		0.99			0.99	0.94
Frt		0.992				0.850		0.995				0.850
Flt Protected		0.975			0.996			0.978			0.983	
Satd. Flow (prot)	0	1642	0	0	1637	1397	0	1678	0	0	1582	1291
Flt Permitted		0.801			0.971			0.778			0.841	
Satd. Flow (perm)	0	1340	0	0	1596	1350	0	1318	0	0	1342	1214
Right Turn on Red			No			Yes			Yes			Yes
Satd. Flow (RTOR)					41			3				190
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		368			600			400			744	
Travel Time (s)		8.4			13.6			9.1			16.9	
Confl. Peds. (#/hr)	9		7	7		9	25		19	19		25
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	0%	0%	0%	0%	0%	2%	4%	0%	0%	1%	3%
Parking (#/hr)	0	0	0				0	0	0			
Adj. Flow (vph)	196	163	22	5	65	11	65	76	5	76	147	190
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	381	0	0	70	11	0	146	0	0	223	190
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.16	1.13	1.16	1.20	1.20	1.20	1.12	1.09	1.12	1.22	1.22	1.28
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		0.0

Lanes, Volumes, Timings  
3: Jefferson/Jefferson St & McClanahan St/Yellow Mountain Rd

2015 Existing PM  
3/26/2015



Lane Group	FBL	FRT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBT
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases			4			8			2		6	
Permitted Phases	4				8	8	8	2		6		6
Detector Phase	4	4			8	8	8	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	12.0	12.0		12.0	12.0	12.0	12.0	12.0		12.0	12.0	12.0
Minimum Split (s)	31.0	31.0		31.0	31.0	31.0	31.0	31.0		31.0	31.0	31.0
Total Split (s)	44.0	44.0		44.0	44.0	44.0	36.0	36.0		36.0	36.0	36.0
Total Split (%)	55.0%	55.0%		55.0%	55.0%	55.0%	45.0%	45.0%		45.0%	45.0%	45.0%
Maximum Green (s)	38.0	38.0		38.0	38.0	38.0	30.0	30.0		30.0	30.0	30.0
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0			0.0	0.0		0.0			0.0	0.0	
Total Lost Time (s)	6.0			6.0	6.0		6.0			6.0	6.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5
Recall Mode	None	None		None	None	None	Min	Min		Min	Min	Min
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	18.0	18.0		18.0	18.0	18.0	18.0	18.0		18.0	18.0	18.0
Pedestrian Calls (#/hr)	16	16		16	16	16	44	44		44	44	44
Act Effct Green (s)	22.8			22.8	22.8		18.3			18.3	18.3	
Actuated g/C Ratio	0.42			0.42	0.42		0.34			0.34	0.34	
v/c Ratio	0.68			0.10	0.02		0.33			0.49	0.35	
Control Delay	20.1			10.6	0.1		17.4			20.2	5.1	
Queue Delay	0.0			0.0	0.0		0.0			0.0	0.0	
Total Delay	20.1			10.6	0.1		17.4			20.2	5.1	
LOS	C			B	A		B			C	A	
Approach Delay	20.1			9.2			17.4			13.3		
Approach LOS	C			A			B			B		

Intersection Summary

Area Type: CBD

Cycle Length: 80

Actuated Cycle Length: 54.1

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.68

Intersection Signal Delay: 16.1

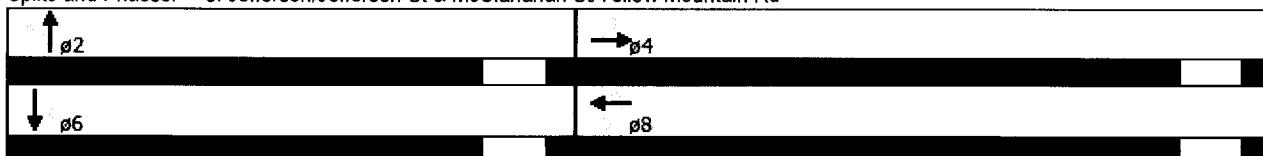
Intersection LOS: B

Intersection Capacity Utilization 75.1%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 3: Jefferson/Jefferson St & McClanahan St/Yellow Mountain Rd



HCM 2010 Signalized Intersection Summary  
3: Jefferson/Jefferson St & McClanahan St/Yellow Mountain Rd

2015 Existing PM  
3/26/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	180	150	20	5	60	10	60	70	5	70	135	175
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	0.98		0.94	0.97		0.96
Parking Bus, Adj	1.00	1.00	0.90	1.00	1.00	1.00	1.00	1.00	0.90	1.00	1.00	1.00
Adj Sat Flow, veh/h/in	1693	1734	1693	1761	1761	1761	1744	1762	1744	1676	1665	1627
Adj Flow Rate, veh/h	196	163	22	5	65	11	65	76	5	76	147	190
Adj No. of Lanes	0	1	0	0	1	1	0	1	0	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0	4	4	4	1	1	3
Cap, veh/h	350	254	30	96	685	596	234	226	12	236	392	463
Arrive On Green	0.40	0.40	0.40	0.40	0.40	0.40	0.35	0.35	0.35	0.35	0.35	0.35
Sat Flow, veh/h	589	632	75	38	1702	1480	363	649	36	390	1128	1333
Grp Volume(v), veh/h	381	0	0	70	0	11	146	0	0	223	0	190
Grp Sat Flow(s), veh/h/in	1295	0	0	1740	0	1480	1048	0	0	1518	0	1333
Q Serve(g_s), s	9.8	0.0	0.0	0.0	0.0	0.2	1.4	0.0	0.0	0.0	0.0	5.2
Cycle Q Clear(g_c), s	11.7	0.0	0.0	1.2	0.0	0.2	6.3	0.0	0.0	4.9	0.0	5.2
Prop In Lane	0.51		0.06	0.07		1.00	0.45		0.03	0.34		1.00
Lane Grp Cap(c), veh/h	635	0	0	780	0	596	473	0	0	628	0	463
V/C Ratio(X)	0.60	0.00	0.00	0.09	0.00	0.02	0.31	0.00	0.00	0.36	0.00	0.41
Avail Cap(c_a), veh/h	1129	0	0	1440	0	1173	793	0	0	1028	0	834
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.9	0.0	0.0	8.9	0.0	8.6	11.8	0.0	0.0	11.8	0.0	11.9
Incr Delay (d2), s/veh	1.6	0.0	0.0	0.1	0.0	0.0	0.6	0.0	0.0	0.6	0.0	1.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/in	4.5	0.0	0.0	0.6	0.0	0.1	1.6	0.0	0.0	2.3	0.0	2.0
LnGrp Delay(d), s/veh	13.5	0.0	0.0	9.0	0.0	8.7	12.4	0.0	0.0	12.4	0.0	12.9
LnGrp LOS	B		A		A	B			B		B	
Approach Vol, veh/h	381			81			146			413		
Approach Delay, s/veh	13.5			9.0			12.4			12.6		
Approach LOS	B		A			B			B		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	2		4		6		8	
Phs Duration (G+Y+Rc), s	22.7		25.3		22.7		25.3	
Change Period (Y+Rc), s	6.0		6.0		6.0		6.0	
Max Green Setting (Gmax), s	30.0		38.0		30.0		38.0	
Max Q Clear Time (g_c+l1), s	8.3		13.7		7.2		3.2	
Green Ext Time (p_c), s	5.0		4.9		5.1		5.4	

**Intersection Summary**

HCM 2010 Ctrl Delay	12.6
HCM 2010 LOS	B

<b>Approach</b>	<b>EB</b>	<b>WB</b>	<b>NB</b>	<b>SB</b>
Crosswalk Length (ft)	29.6	32.0	28.2	38.3
Crosswalk Width (ft)	12.0	12.0	12.0	12.0
Total Number of Lanes Crossed	2	3	2	3
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	6	2	4	8
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (mph)	30	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-	-
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-	-
Pedestrian Delay (s/p)	40.0	40.0	40.0	40.0
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.06	2.05	1.88	2.17
Pedestrian Crosswalk LOS	B	B	A	B

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Two Way Analysis cannot be performed on Signalized Intersection.

Lanes, Volumes, Timings  
6: Jefferson St & Weller Ave/Flannagan Dr

2015 Existing PM

3/26/2015

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NTL	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	45	45	55	25	5	30	5	230	25	35	295	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	14	14	11	11	12	12	16	12	12	12	12
Grade (%)						-3%			-6%			-5%
Storage Length (ft)	0		0	0		0	0		80	0		85
Storage Lanes	1		0	0		1	0		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor	0.99				1.00				1.00		1.00	0.99
Frt	0.917					0.850		0.987				0.850
Flt Protected	0.950				0.960			0.999			0.995	
Satd. Flow (prot)	1554	1614	0	0	1558	1341	0	1715	0	0	3255	1461
Flt Permitted	0.736				0.685			0.992			0.900	
Satd. Flow (perm)	1204	1614	0	0	1109	1341	0	1703	0	0	2944	1441
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)	60					41		9				60
Link Speed (mph)	30				30			30			30	
Link Distance (ft)	138				151			744			1530	
Travel Time (s)	3.1				3.4			16.9			34.8	
Confl. Peds. (#/hr)		4	4				2		1	1		2
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	8%	0%	5%	4%	0%	10%	0%	3%	4%	0%	2%	2%
Parking (#/hr)								0	0			
Adj. Flow (vph)	49	49	60	27	5	33	5	250	27	38	321	60
Shared Lane Traffic (%)												
Lane Group Flow (vph)	49	109	0	0	32	33	0	282	0	0	359	60
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(ft)	13				13			11			11	
Link Offset(ft)	0				0			0			0	
Crosswalk Width(ft)	16				16			16			16	
Two way Left Turn Lane												
Headway Factor	1.10	1.05	1.05	1.17	1.17	1.12	1.10	1.07	1.10	1.11	1.11	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	

Lanes, Volumes, Timings  
6: Jefferson St & Weller Ave/Flannagan Dr

2015 Existing PM  
3/26/2015



Lane Group	EBL	EEST	EDR	WBL	WEF	WER	NBL	NFT	NFR	SBL	SFT	SBR
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex		Cl+Ex		Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0		0.0		0.0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases		4			8		8	2		6		6
Permitted Phases	4			8	8	8	2	2		6		6
Detector Phase	4	4		8	8	8	2	2		6	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	12.0	12.0		12.0	12.0	12.0
Minimum Split (s)	31.0	31.0		22.0	22.0	22.0	22.0	22.0		34.0	34.0	34.0
Total Split (s)	38.0	38.0		38.0	38.0	38.0	42.0	42.0		42.0	42.0	42.0
Total Split (%)	47.5%	47.5%		47.5%	47.5%	47.5%	52.5%	52.5%		52.5%	52.5%	52.5%
Maximum Green (s)	32.0	32.0		32.0	32.0	32.0	36.0	36.0		36.0	36.0	36.0
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0			0.0	0.0		0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0			6.0	6.0		6.0		6.0	6.0	6.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	4.5	4.5		4.5	4.5	4.5	6.0	6.0		6.0	6.0	6.0
Recall Mode	None	None		None	None	None	Min	Min		Min	Min	Min
Walk Time (s)	7.0	7.0								7.0	7.0	7.0
Flash Dont Walk (s)	18.0	18.0								21.0	21.0	21.0
Pedestrian Calls (#/hr)	4	4								3	3	3
Act Effct Green (s)	10.7	10.7		10.7	10.7		21.4			21.4	21.4	
Actuated g/C Ratio	0.27	0.27		0.27	0.27		0.53			0.53	0.53	
v/c Ratio	0.15	0.23		0.11	0.09		0.31			0.23	0.08	
Control Delay	13.0	7.9		12.6	4.8		9.8			8.6	3.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0			0.0	0.0	
Total Delay	13.0	7.9		12.6	4.8		9.8			8.6	3.6	
LOS	B	A		B	A		A			A	A	
Approach Delay		9.5			8.7		9.8			7.9		
Approach LOS		A			A		A			A		

**Intersection Summary:**

Area Type: CBD

Cycle Length: 80

Actuated Cycle Length: 40.3

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.31

Intersection Signal Delay: 8.8

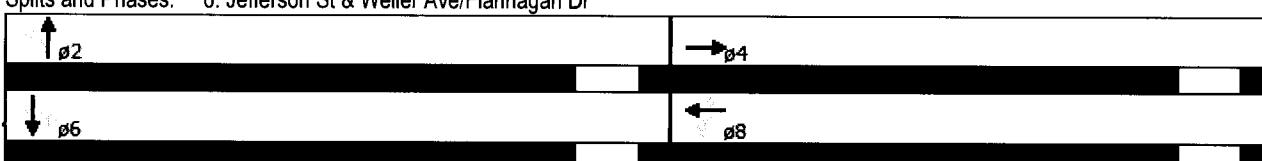
Intersection LOS: A

Intersection Capacity Utilization 49.7%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 6: Jefferson St & Weller Ave/Flannagan Dr



HCM 2010 Signalized Intersection Summary  
6: Jefferson St & Weller Ave/Flannagan Dr

2015 Existing PM  
3/26/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑↑	↑↑	↑
Volume (veh/h)	45	45	55	25	5	30	5	230	25	35	295	55
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	1.00		0.99	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.90	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1647	1731	1778	1736	1679	1578	1761	1778	1761	1753	1722	1718
Adj Flow Rate, veh/h	49	49	60	27	5	33	5	250	27	38	321	60
Adj No. of Lanes	1	1	0	0	1	1	0	1	0	0	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	8	0	0	0	0	10	3	3	3	2	2	2
Cap, veh/h	362	147	180	331	45	277	102	659	70	202	1358	683
Arrive On Green	0.21	0.21	0.21	0.21	0.21	0.21	0.47	0.47	0.47	0.47	0.47	0.47
Sat Flow, veh/h	1197	707	865	730	216	1328	7	1407	150	182	2901	1459
Grp Volume(v), veh/h	49	0	109	32	0	33	282	0	0	190	169	60
Grp Sat Flow(s),veh/h/ln	1197	0	1572	946	0	1328	1564	0	0	1594	1489	1459
Q Serve(g_s), s	1.4	0.0	2.2	0.3	0.0	0.7	0.0	0.0	0.0	0.0	2.5	0.8
Cycle Q Clear(g_c), s	3.9	0.0	2.2	2.5	0.0	0.7	4.3	0.0	0.0	2.5	2.5	0.8
Prop In Lane	1.00		0.55	0.84		1.00	0.02		0.10	0.20		1.00
Lane Grp Cap(c), veh/h	362	0	328	376	0	277	831	0	0	863	697	683
V/C Ratio(X)	0.14	0.00	0.33	0.09	0.00	0.12	0.34	0.00	0.00	0.22	0.24	0.09
Avail Cap(c_a), veh/h	1144	0	1356	1166	0	1145	1607	0	0	1621	1444	1415
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.3	0.0	12.5	12.4	0.0	11.9	6.4	0.0	0.0	5.9	5.9	5.5
Incr Delay (d2), s/veh	0.3	0.0	1.0	0.2	0.0	0.3	0.9	0.0	0.0	0.5	0.6	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	1.0	0.3	0.0	0.3	2.0	0.0	0.0	1.3	1.2	0.4
LnGrp Delay(d),s/veh	14.6	0.0	13.5	12.6	0.0	12.2	7.3	0.0	0.0	6.4	6.6	5.7
LnGrp LOS	B	B	B		B	A			A	A	A	
Approach Vol, veh/h		158			65			282			419	
Approach Delay, s/veh		13.8			12.4			7.3			6.3	
Approach LOS		B			B			A			A	
Time	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6			8				
Phs Duration (G+Y+Rc), s	23.4		13.7		23.4			13.7				
Change Period (Y+Rc), s	6.0		6.0		6.0			6.0				
Max Green Setting (Gmax), s	36.0		32.0		36.0			32.0				
Max Q Clear Time (g_c+1), s	6.3		5.9		4.5			4.5				
Green Ext Time (p_c), s	11.0		1.9		11.3			1.9				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			8.3									
HCM 2010 LOS			A									

Approach	EB	WB	NB	SB
Crosswalk Length (ft)	58.2	45.3	47.5	58.4
Crosswalk Width (ft)	12.0	12.0	12.0	12.0
Total Number of Lanes Crossed	4	3	3	4
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	6	2	4	8
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (mph)	30	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-	-
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-	-
Pedestrian Delay (s/p)	40.0	40.0	40.0	40.0
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.19	2.00	2.17	2.32
Pedestrian Crosswalk LOS	B	B	B	B

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Two Way Analysis cannot be performed on Signalized Intersection.

Lanes, Volumes, Timings  
7: Evans Mill Rd & Weller Ave

2015 Existing PM  
3/26/2015

Lane Group	WBL	WBR	NET	NBT	SBL	SBT
Lane Configurations	1	1	1↑	1	1	1↑
Volume (vph)	50	15	145	55	90	365
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	14	15	10	10	10	10
Lane Util. Factor	1.00	1.00	0.95	0.95	0.95	0.95
Ped Bike Factor						
Fr1		0.850	0.959			
Flt Protected	0.950					0.990
Satd. Flow (prot)	1699	1599	2838	0	0	2990
Flt Permitted	0.950					0.990
Satd. Flow (perm)	1699	1599	2838	0	0	2990
Link Speed (mph)	30		30			30
Link Distance (ft)	138		244			240
Travel Time (s)	3.1		5.5			5.5
Confl. Peds. (#/hr)				2	2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	0%	9%	2%	0%
Adj. Flow (vph)	54	16	158	60	98	397
Shared Lane Traffic (%)						
Lane Group Flow (vph)	54	16	218	0	0	495
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	14		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.05	1.01	1.25	1.25	1.25	1.25
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

**Intersection Summary**

Area Type: CBD

Control Type: Unsignalized

Intersection Capacity Utilization 34.4%

ICU Level of Service A

Analysis Period (min) 15

**Intersection**

Int Delay, s/veh 2.3

Movement	WBL	WBR	NBT	NBR	SBL	SST
Vol, veh/h	50	15	145	55	90	365
Conflicting Peds, #/hr	0	0	0	2	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	0	0	9	2	0
Mvmt Flow	54	16	158	60	98	397

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	582	111	0 0 217 0
Stage 1	188	-	- - - -
Stage 2	394	-	- - - -
Critical Hdwy	6.84	6.9	- - 4.14 -
Critical Hdwy Stg 1	5.84	-	- - - -
Critical Hdwy Stg 2	5.84	-	- - - -
Follow-up Hdwy	3.52	3.3	- - 2.22 -
Pot Cap-1 Maneuver	444	927	- - 1350 -
Stage 1	825	-	- - - -
Stage 2	650	-	- - - -
Platoon blocked, %		-	- - - -
Mov Cap-1 Maneuver	402	926	- - 1348 -
Mov Cap-2 Maneuver	402	-	- - - -
Stage 1	825	-	- - - -
Stage 2	589	-	- - - -

Approach	WB	NB	SB
HCM Control Delay, s	13.9	0	1.7
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR/WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	- 402	926 1348	-	
HCM Lane V/C Ratio	-	- 0.135	0.018 0.073	-	
HCM Control Delay (s)	-	- 15.4	9 7.9	0.2	
HCM Lane LOS	-	- C	A A A		
HCM 95th %tile Q(veh)	-	- 0.5	0.1 0.2	-	

Lanes, Volumes, Timings  
12: Jefferson St & Reserve Ave

2015 Existing PM  
3/26/2015

	EBL	EST	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑	→	↓	↑	←	↑	↑	↑	↑	↑	↑
Volume (vph)	185	25	25	5	35	175	10	260	5	80	360	270
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	15	15	12	12	12	11	11	11	11	11	15
Grade (%)		0%			0%			-5%			0%	
Storage Length (ft)	0		0	100		0	100		0	220		80
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	25			100			150			180		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00
Frt		0.925			0.875			0.997				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1593	1706	0	1593	1467	0	1578	1656	0	1540	3079	1568
Flt Permitted	0.533			0.722			0.428			0.583		
Satd. Flow (perm)	894	1706	0	1210	1467	0	711	1656	0	945	3079	1568
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		27			190			2				293
Link Speed (mph)		30			30			30				30
Link Distance (ft)		551			718			1530				504
Travel Time (s)		12.5			16.3			34.8				11.5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	201	27	27	5	38	190	11	283	5	87	391	293
Shared Lane Traffic (%)												
Lane Group Flow (vph)	201	54	0	5	228	0	11	288	0	87	391	293
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(ft)	12				12			11				11
Link Offset(ft)	0				0			0				0
Crosswalk Width(ft)	16				16			16				16
Two way Left Turn Lane												
Headway Factor	1.14	1.01	1.01	1.14	1.14	1.14	1.16	1.16	1.16	1.19	1.19	1.01
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100		20	100	20
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)	94			94			94			94		
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	

Lanes, Volumes, Timings  
12: Jefferson St & Reserve Ave

2015 Existing PM  
3/26/2015

Lane Group	PBI	FRT	FDR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SEB
Permitted Phases	4			8			2			6		6
Detector Phase	4	4		8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		4.0	30.0		4.0	30.0	30.0
Minimum Split (s)	22.0	22.0		22.0	22.0		18.0	36.0		10.0	36.0	36.0
Total Split (s)	26.0	26.0		26.0	26.0		18.0	44.0		10.0	36.0	36.0
Total Split (%)	32.5%	32.5%		32.5%	32.5%		22.5%	55.0%		12.5%	45.0%	45.0%
Maximum Green (s)	20.0	20.0		20.0	20.0		12.0	38.0		4.0	30.0	30.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Lead/Lag							Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		0.2	6.0		0.2	6.0	6.0
Recall Mode	Max	Max		Max	Max		Max	None		Max	None	None
Walk Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	5.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0			11.0			11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0			0			0	0
Act Effct Green (s)	20.0	20.0		20.0	20.0		48.0	38.0		34.0	30.0	30.0
Actuated g/C Ratio	0.25	0.25		0.25	0.25		0.60	0.48		0.42	0.38	0.38
v/c Ratio	0.90	0.12		0.02	0.45		0.02	0.37		0.20	0.34	0.38
Control Delay	71.9	14.9		23.0	9.4		6.6	15.0		9.4	18.9	3.9
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	71.9	14.9		23.0	9.4		6.6	15.0		9.4	18.9	3.9
LOS	E	B		C	A		A	B		A	B	A
Approach Delay		59.9			9.6			14.6			12.1	
Approach LOS		E			A			B			B	

Intersection Summary

Area Type: CBD

Cycle Length: 80

Actuated Cycle Length: 80

Natural Cycle: 80

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 20.1

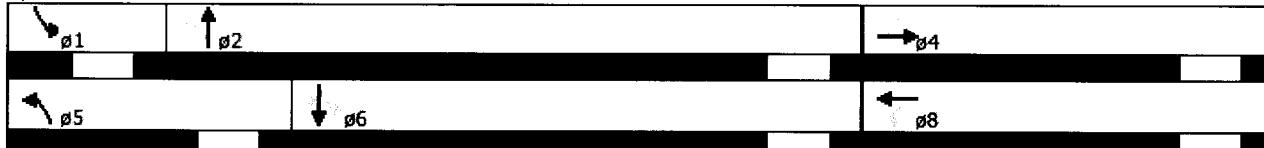
Intersection LOS: C

Intersection Capacity Utilization 75.3%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 12: Jefferson St & Reserve Ave



HCM 2010 Signalized Intersection Summary  
12: Jefferson St & Reserve Ave

2015 Existing PM  
3/26/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑ ↗	↑ ↘	↑ ↗	↑ ↘	↑ ↗	↑ ↘	↑ ↗	↑ ↘	↑ ↗	↑ ↘	↑ ↗	↑ ↘
Volume (veh/h)	185	25	25	5	35	175	10	260	5	80	360	270
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A <sub>pbT</sub> )	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1676	1744	1778	1676	1676	1710	1718	1718	1753	1676	1676	1744
Adj Flow Rate, veh/h	201	27	27	5	38	190	11	283	5	87	391	0
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	205	200	200	361	61	304	598	800	14	531	1194	556
Arrive On Green	0.25	0.25	0.25	0.25	0.25	0.25	0.15	0.47	0.47	0.05	0.38	0.00
Sat Flow, veh/h	1033	801	801	1210	244	1218	1637	1683	30	1597	3185	1482
Grp Volume(v), veh/h	201	0	54	5	0	228	11	0	288	87	391	0
Grp Sat Flow(s), veh/h/ln	1033	0	1602	1210	0	1462	1637	0	1713	1597	1593	1482
Q Serve(g_s), s	8.9	0.0	2.1	0.3	0.0	11.1	0.2	0.0	8.5	2.7	7.0	0.0
Cycle Q Clear(g_c), s	20.0	0.0	2.1	2.4	0.0	11.1	0.2	0.0	8.5	2.7	7.0	0.0
Prop In Lane	1.00		0.50	1.00		0.83	1.00		0.02	1.00		1.00
Lane Grp Cap(c), veh/h	205	0	401	361	0	365	598	0	814	531	1194	556
V/C Ratio(X)	0.98	0.00	0.13	0.01	0.00	0.62	0.02	0.00	0.35	0.16	0.33	0.00
Avail Cap(c_a), veh/h	205	0	401	361	0	365	598	0	814	531	1194	556
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	37.4	0.0	23.3	24.2	0.0	26.7	8.7	0.0	13.3	14.0	17.8	0.0
Incr Delay (d2), s/veh	57.9	0.0	0.7	0.1	0.0	7.8	0.1	0.0	0.9	0.7	0.6	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	7.7	0.0	1.0	0.1	0.0	5.2	0.1	0.0	4.2	1.2	3.1	0.0
LnGrp Delay(d), s/veh	95.4	0.0	24.0	24.3	0.0	34.5	8.7	0.0	14.2	14.7	18.4	0.0
LnGrp LOS	F		C	C		C	A		B	B	B	
Approach Vol, veh/h		255			233			299			478	
Approach Delay, s/veh		80.3			34.3			14.0			17.7	
Approach LOS		F			C			B			B	
Time	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+R <sub>c</sub> ), s	10.0	44.0		26.0	18.0	36.0		26.0				
Change Period (Y+R <sub>c</sub> ), s	6.0	6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s	4.0	38.0		20.0	12.0	30.0		20.0				
Max Q Clear Time (g_c+1), s	4.7	10.5		22.0	2.2	9.0		13.1				
Green Ext Time (p_c), s	0.0	10.8		0.0	0.0	9.4		1.6				

**Intersection Summary**

HCM 2010 Ctrl Delay	32.5
HCM 2010 LOS	C

Approach	EB	WB	NB	SB
Crosswalk Length (ft)	39.1	36.5	46.3	45.1
Crosswalk Width (ft)	12.0	12.0	12.0	12.0
Total Number of Lanes Crossed	3	3	4	4
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	6	2	4	8
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (mph)	30	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-	-
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-	-
Pedestrian Delay (s/p)	40.0	40.0	40.0	40.0
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.14	2.06	2.31	2.49
Pedestrian Crosswalk LOS	B	B	B	B

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Two Way Analysis cannot be performed on Signalized Intersection.

Lanes, Volumes, Timings  
3: Jefferson/Jefferson St & McClanahan St/Yellow Mountain Rd

2020 Background AM

3/26/2015

Lane Group	ED	EDT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	189	21	32	5	147	84	26	194	5	16	63	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	10	10	10	12	16	12	11	11	10
Grade (%)			2%		-6%			-4%			4%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99			1.00	0.97		0.99			1.00	0.91
Frt		0.982				0.850		0.997				0.850
Flt Protected		0.962			0.998			0.994			0.990	
Satd. Flow (prot)	0	1573	0	0	1609	1397	0	1720	0	0	1542	1278
Flt Permitted		0.668			0.989			0.962			0.919	
Satd. Flow (perm)	0	1086	0	0	1594	1356	0	1652	0	0	1427	1163
Right Turn on Red			No			Yes			Yes			Yes
Satd. Flow (RTOR)					91		2					109
Link Speed (mph)		30			30			30				30
Link Distance (ft)		368			600			400				744
Travel Time (s)		8.4			13.6			9.1				16.9
Confl. Peds. (#/hr)	6		13	13		6	45		16	16		45
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	0%	6%	0%	2%	0%	6%	2%	0%	8%	3%	4%
Parking (#/hr)	0	0	0				0	0	0			
Adj. Flow (vph)	205	23	35	5	160	91	28	211	5	17	68	109
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	263	0	0	165	91	0	244	0	0	85	109
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(ft)	0			0			0				0	
Link Offset(ft)	0			0			0				0	
Crosswalk Width(ft)	16			16			16				16	
Two way Left Turn Lane												
Headway Factor	1.16	1.13	1.16	1.20	1.20	1.20	1.12	1.09	1.12	1.22	1.22	1.28
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm

Baseline  
thl/msa

Synchro 8 Report  
Page 1

## Lanes, Volumes, Timings

2020 Background AM

3: Jefferson/Jefferson St &amp; McClanahan St/Yellow Mountain Rd

3/26/2015



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4			8			2			6	
Permitted Phases	4				8		8	2			6	
Detector Phase	4	4		8	8	8	2	2		6	6	
Switch Phase												
Minimum Initial (s)	12.0	12.0		12.0	12.0	12.0	12.0	12.0		12.0	12.0	12.0
Minimum Split (s)	31.0	31.0		31.0	31.0	31.0	31.0	31.0		31.0	31.0	31.0
Total Split (s)	44.0	44.0		44.0	44.0	44.0	36.0	36.0		36.0	36.0	36.0
Total Split (%)	55.0%	55.0%		55.0%	55.0%	55.0%	45.0%	45.0%		45.0%	45.0%	45.0%
Maximum Green (s)	38.0	38.0		38.0	38.0	38.0	30.0	30.0		30.0	30.0	30.0
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0				0.0	0.0		0.0			0.0	0.0
Total Lost Time (s)	6.0				6.0	6.0		6.0			6.0	6.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5
Recall Mode	None	None		None	None	None	Min	Min		Min	Min	Min
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	18.0	18.0		18.0	18.0	18.0	18.0	18.0		18.0	18.0	18.0
Pedestrian Calls (#/hr)	19	19		19	19	19	61	61		61	61	61
Act Effct Green (s)	19.6				19.6	19.6		19.4			19.4	19.4
Actuated g/C Ratio	0.38				0.38	0.38		0.37			0.37	0.37
v/c Ratio	0.64				0.27	0.16		0.39			0.16	0.22
Control Delay	22.3				13.3	3.8		15.1			13.1	4.6
Queue Delay	0.0				0.0	0.0		0.0			0.0	0.0
Total Delay	22.3				13.3	3.8		15.1			13.1	4.6
LOS	C				B	A		B			B	A
Approach Delay	22.3				9.9			15.1			8.3	
Approach LOS	C				A			B			A	

## Total Cyclist Summary

Area Type: CBD

Cycle Length: 80

Actuated Cycle Length: 51.8

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.64

Intersection Signal Delay: 14.3

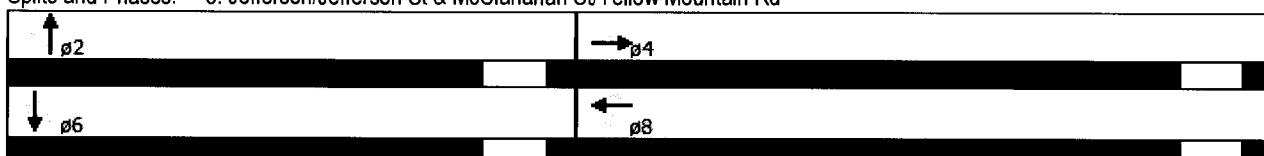
Intersection LOS: B

Intersection Capacity Utilization 64.5%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 3: Jefferson/Jefferson St &amp; McClanahan St/Yellow Mountain Rd



HCM 2010 Signalized Intersection Summary  
3: Jefferson/Jefferson St & McClanahan St/Yellow Mountain Rd

2020 Background AM  
3/26/2015

Movement	EGL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	189	21	32	5	147	84	26	194	5	16	63	100
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A <sub>pbT</sub> )	0.99		0.98	0.99		0.98	0.95		0.94	0.96		0.94
Parking Bus, Adj	1.00	1.00	0.90	1.00	1.00	1.00	1.00	1.00	0.90	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1693	1707	1693	1761	1728	1761	1744	1771	1744	1676	1611	1611
Adj Flow Rate, veh/h	205	23	35	5	160	91	28	211	5	17	68	109
Adj No. of Lanes	0	1	0	0	1	1	0	1	0	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	2	2	0	2	2	2	3	3	4
Cap, veh/h	399	45	49	76	718	618	106	498	11	145	463	450
Arrive On Green	0.42	0.42	0.42	0.42	0.42	0.42	0.35	0.35	0.35	0.35	0.35	0.35
Sat Flow, veh/h	659	107	118	11	1712	1474	84	1418	31	176	1317	1282
Grp Volume(v), veh/h	263	0	0	165	0	91	244	0	0	85	0	109
Grp Sat Flow(s), veh/h/ln	884	0	0	1723	0	1474	1533	0	0	1493	0	1282
Q Serve(g_s), s	11.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	3.2
Cycle Q Clear(g_c), s	14.2	0.0	0.0	3.2	0.0	2.0	6.2	0.0	0.0	1.9	0.0	3.2
Prop In Lane	0.78		0.13	0.03		1.00	0.11		0.02	0.20		1.00
Lane Grp Cap(c), veh/h	493	0	0	793	0	618	615	0	0	607	0	450
V/C Ratio(X)	0.53	0.00	0.00	0.21	0.00	0.15	0.40	0.00	0.00	0.14	0.00	0.24
Avail Cap(c_a), veh/h	798	0	0	1318	0	1071	944	0	0	923	0	735
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.8	0.0	0.0	9.8	0.0	9.4	13.0	0.0	0.0	11.6	0.0	12.0
Incr Delay (d2), s/veh	1.5	0.0	0.0	0.2	0.0	0.2	0.7	0.0	0.0	0.2	0.0	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	3.4	0.0	0.0	1.6	0.0	0.8	2.8	0.0	0.0	0.9	0.0	1.2
LnGrp Delay(d), s/veh	15.3	0.0	0.0	10.0	0.0	9.6	13.7	0.0	0.0	11.8	0.0	12.5
LnGrp LOS	B		A		A	B			B		B	
Approach Vol, veh/h	263			256				244			194	
Approach Delay, s/veh	15.3			9.8				13.7			12.2	
Approach LOS	B		A			B			B		B	

Time	1	2	3	4	5	6	7	8
Assigned Phs	2		4		6		8	
Phs Duration (G+Y+Rc), s	24.4		27.9		24.4		27.9	
Change Period (Y+Rc), s	6.0		6.0		6.0		6.0	
Max Green Setting (Gmax), s	30.0		38.0		30.0		38.0	
Max Q Clear Time (g_c+1), s	8.2		16.2		5.2		5.2	
Green Ext Time (p_c), s	3.9		5.1		4.1		5.8	

**Intersection Summary**

HCM 2010 Ctrl Delay	12.8
HCM 2010 LOS	B

<b>Approach</b>	<b>EB</b>	<b>WB</b>	<b>NB</b>	<b>SB</b>
Crosswalk Length (ft)	29.6	32.0	28.2	38.3
Crosswalk Width (ft)	12.0	12.0	12.0	12.0
Total Number of Lanes Crossed	2	3	2	3
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	6	2	4	8
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (mph)	30	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-	-
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-	-
Pedestrian Delay (s/p)	40.0	40.0	40.0	40.0
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	1.99	2.04	1.89	2.17
Pedestrian Crosswalk LOS	A	B	A	B

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Two Way Analysis cannot be performed on Signalized Intersection.

Lanes, Volumes, Timings  
6: Jefferson St & Weller Ave/Flannagan Dr

2020 Background AM  
3/26/2015

Lane Group	EPL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SQL	SBT	SBR
Lane Configurations	↑ ↗	↑ ↘	↗ ↙	← ↗	↙ ↘	↖ ↙	↑ ↗	↑ ↘	↗ ↙	↑ ↗	↑ ↘	↗ ↙
Volume (vph)	32	42	32	21	11	21	11	415	42	89	126	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	14	14	11	11	12	12	16	12	12	12	12
Grade (%)		0%			-3%			-6%			-5%	
Storage Length (ft)	0		0	0		0	0		80	0		85
Storage Lanes	1		0	0		1	0		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor	0.99			0.99				1.00			1.00	
Frt	0.935					0.850		0.988				0.850
Flt Protected	0.950				0.968			0.999			0.980	
Satd. Flow (prot)	1472	1540	0	0	1555	1475	0	1746	0	0	3163	1433
Flt Permitted	0.734				0.753			0.992			0.702	
Satd. Flow (perm)	1138	1540	0	0	1198	1475	0	1734	0	0	2264	1433
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)	35					41		9				68
Link Speed (mph)	30				30			30			30	
Link Distance (ft)	138				151			744			1530	
Travel Time (s)	3.1				3.4			16.9			34.8	
Confl. Peds. (#/hr)		17	17						3	3		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	14%	9%	10%	0%	13%	0%	20%	1%	0%	2%	4%	4%
Parking (#/hr)							0	0				
Adj. Flow (vph)	35	46	35	23	12	23	12	451	46	97	137	68
Shared Lane Traffic (%)												
Lane Group Flow (vph)	35	81	0	0	35	23	0	509	0	0	234	68
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(ft)	13				13			11			11	
Link Offset(ft)	0				0			0			0	
Crosswalk Width(ft)	16				16			16			16	
Two way Left Turn Lane												
Headway Factor	1.10	1.05	1.05	1.17	1.17	1.12	1.10	1.07	1.10	1.11	1.11	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	

Lanes, Volumes, Timings  
6: Jefferson St & Weller Ave/Flannagan Dr

2020 Background AM

3/26/2015



Line Group	EBL	EBT	EBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel									
Detector 2 Extend (s)		0.0		0.0		0.0		0.0	
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases		4		8		2		6	6
Permitted Phases	4		8	8	8	2		6	6
Detector Phase	4	4	8	8	8	2	2	6	6
Switch Phase									
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	12.0	12.0	12.0	12.0
Minimum Split (s)	31.0	31.0	22.0	22.0	22.0	22.0	34.0	34.0	34.0
Total Split (s)	32.0	32.0	32.0	32.0	48.0	48.0	48.0	48.0	48.0
Total Split (%)	40.0%	40.0%	40.0%	40.0%	40.0%	60.0%	60.0%	60.0%	60.0%
Maximum Green (s)	26.0	26.0	26.0	26.0	42.0	42.0	42.0	42.0	42.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag									
Lead-Lag Optimize?									
Vehicle Extension (s)	4.5	4.5	4.5	4.5	4.5	6.0	6.0	6.0	6.0
Recall Mode	None	None	None	None	None	Min	Min	Min	Min
Walk Time (s)	7.0	7.0					7.0	7.0	7.0
Flash Dont Walk (s)	18.0	18.0					21.0	21.0	21.0
Pedestrian Calls (#/hr)	17	17					3	3	3
Act Effct Green (s)	10.8	10.8	10.8	10.8	31.0			31.0	31.0
Actuated g/C Ratio	0.22	0.22	0.22	0.22	0.63			0.63	0.63
v/c Ratio	0.14	0.22	0.13	0.06	0.46			0.16	0.07
Control Delay	18.2	12.6	18.0	4.0	9.7			7.1	2.7
Queue Delay	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay	18.2	12.6	18.0	4.0	9.7			7.1	2.7
LOS	B	B	B	A	A			A	A
Approach Delay		14.3	12.4		9.7			6.1	
Approach LOS		B	B		A			A	

Intersection Summary

Area Type: CBD

Cycle Length: 80

Actuated Cycle Length: 49.1

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.46

Intersection Signal Delay: 9.3

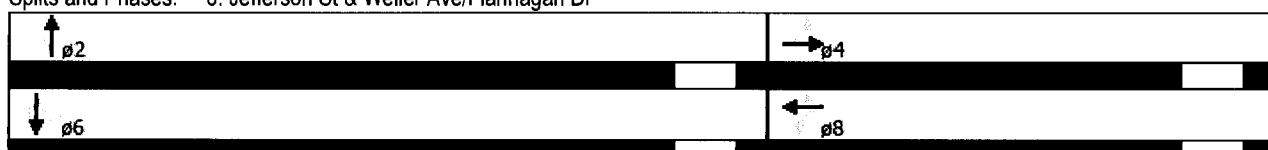
Intersection LOS: A

Intersection Capacity Utilization 66.7%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 6: Jefferson St & Weller Ave/Flannagan Dr



Baseline

thl/msa

Synchro 8 Report

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HCM 2010 Signalized Intersection Summary  
6: Jefferson St & Weller Ave/Flannagan Dr

2020 Background AM  
3/26/2015

Movement	EBL	EBS	EBC	WBL	WBS	WBC	NBL	NBS	NBC	SBL	SBS	SBC
Lane Configurations	↑	↑			↑	↑		↔		↑↑		↑
Volume (veh/h)	32	42	32	21	11	21	11	415	42	89	126	63
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A <sub>pbT</sub> )	0.97		0.98	0.98		0.96	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.90	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1560	1625	1778	1736	1662	1736	1761	1807	1761	1753	1699	1685
Adj Flow Rate, veh/h	35	46	35	23	12	23	12	451	46	97	137	68
Adj No. of Lanes	1	1	0	0	1	1	0	1	0	0	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	14	9	9	13	13	0	1	1	1	4	4	4
Cap, veh/h	330	177	135	262	108	296	83	780	78	547	796	775
Arrive On Green	0.21	0.21	0.21	0.21	0.21	0.21	0.54	0.54	0.54	0.54	0.54	0.54
Sat Flow, veh/h	1106	848	645	660	516	1415	12	1438	144	734	1469	1430
Grp Volume(v), veh/h	35	0	81	35	0	23	509	0	0	97	137	68
Grp Sat Flow(s),veh/h/ln	1106	0	1492	1176	0	1415	1594	0	0	734	1469	1430
Q Serve(g_s), s	1.3	0.0	2.2	0.0	0.0	0.6	0.0	0.0	0.0	0.0	2.3	1.1
Cycle Q Clear(g_c), s	3.5	0.0	2.2	2.2	0.0	0.6	10.3	0.0	0.0	4.2	2.3	1.1
Prop In Lane	1.00		0.43	0.66		1.00	0.02		0.09	1.00		1.00
Lane Grp Cap(c), veh/h	330	0	312	370	0	296	940	0	0	547	796	775
V/C Ratio(X)	0.11	0.00	0.26	0.09	0.00	0.08	0.54	0.00	0.00	0.18	0.17	0.09
Avail Cap(c_a), veh/h	694	0	804	793	0	763	1459	0	0	815	1278	1245
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.5	0.0	16.0	15.4	0.0	15.3	7.4	0.0	0.0	6.0	5.6	5.3
Incr Delay (d2), s/veh	0.2	0.0	0.7	0.2	0.0	0.2	1.8	0.0	0.0	0.6	0.4	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	1.0	0.4	0.0	0.3	4.8	0.0	0.0	0.8	1.0	0.5
LnGrp Delay(d),s/veh	17.7	0.0	16.7	15.6	0.0	15.5	9.2	0.0	0.0	6.6	5.9	5.5
LnGrp LOS	B	B	B	B	B	A			A	A	A	
Approach Vol, veh/h	116				58			509			302	
Approach Delay, s/veh	17.0				15.6			9.2			6.0	
Approach LOS	B			B			A			A		

Time	1	2	3	4	5	6	7	8
Assigned Phs	2		4		6		8	
Phs Duration (G+Y+Rc), s	32.2		16.1		32.2		16.1	
Change Period (Y+Rc), s	6.0		6.0		6.0		6.0	
Max Green Setting (Gmax), s	42.0		26.0		42.0		26.0	
Max Q Clear Time (g_c+1), s	12.3		5.5		6.2		4.2	
Green Ext Time (p_c), s	13.9		1.3		15.2		1.4	

Intersection Summary								
HCM 2010 Ctrl Delay								9.5
HCM 2010 LOS								A

Approach	EB	WB	NB	SB
Crosswalk Length (ft)	58.2	45.3	47.5	58.4
Crosswalk Width (ft)	12.0	12.0	12.0	12.0
Total Number of Lanes Crossed	4	3	3	4
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	6	2	4	8
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (mph)	30	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-	-
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-	-
Pedestrian Delay (s/p)	40.0	40.0	40.0	40.0
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.19	2.03	2.17	2.33
Pedestrian Crosswalk LOS	B	B	B	B

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Two Way Analysis cannot be performed on Signalized Intersection.

Lane Group	WBL	WEB	NBT	NBR	SEL	SET
Lane Configurations						
Volume (vph)	63	21	179	63	42	320
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	14	15	10	10	10	10
Lane Util. Factor	1.00	1.00	0.95	0.95	0.95	0.95
Fr <sub>t</sub>		0.850	0.961			
Flt Protected	0.950					0.994
Satd. Flow (prot)	1604	1537	2841	0	0	2960
Flt Permitted	0.950					0.994
Satd. Flow (perm)	1604	1537	2841	0	0	2960
Link Speed (mph)	30		30			30
Link Distance (ft)	138		244			240
Travel Time (s)	3.1		5.5			5.5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	8%	4%	0%	10%	8%	1%
Adj. Flow (vph)	68	23	195	68	46	348
Shared Lane Traffic (%)						
Lane Group Flow (vph)	68	23	263	0	0	394
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	14		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.05	1.01	1.25	1.25	1.25	1.25
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

#### Intersection Summary

Area Type: CBD

Control Type: Unsignalized

Intersection Capacity Utilization 32.8%

ICU Level of Service A

Analysis Period (min) 15

**Intersection**

Int Delay, s/veh 2.1

Minor Movement	WBL	WBR	NBT	NBR	SBL	SBT	
Vol, veh/h	63	21		179	63	42	320
Conflicting Peds, #/hr	0	0		0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free	
RT Channelized	-	Stop	-	None	-	None	
Storage Length	0	0	-	-	-	-	
Veh in Median Storage, #	0	-	0	-	-	0	
Grade, %	0	-	0	-	-	0	
Peak Hour Factor	92	92	92	92	92	92	
Heavy Vehicles, %	8	4	0	10	8	1	
Mvmt Flow	68	23	195	68	46	348	

Major/Minor	Minor 1	Major 1	Major 2
Conflicting Flow All	494	132	0 0 263 0
Stage 1	229	-	- - - -
Stage 2	265	-	- - - -
Critical Hdwy	6.96	6.98	- - 4.26 -
Critical Hdwy Stg 1	5.96	-	- - - -
Critical Hdwy Stg 2	5.96	-	- - - -
Follow-up Hdwy	3.58	3.34	- - 2.28 -
Pot Cap-1 Maneuver	490	887	- - 1256 -
Stage 1	770	-	- - - -
Stage 2	738	-	- - - -
Platoon blocked, %		- -	- -
Mov Cap-1 Maneuver	468	887	- - 1256 -
Mov Cap-2 Maneuver	468	-	- - - -
Stage 1	770	-	- - - -
Stage 2	705	-	- - - -

Approach	WB	NB	SB
HCM Control Delay, s	12.8	0	1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBL n1	WBL n2	SBL	SBT
Capacity (veh/h)	-	-	468	887	1256	-
HCM Lane V/C Ratio	-	-	0.146	0.026	0.036	-
HCM Control Delay (s)	-	-	14	9.2	8	0.1
HCM Lane LOS	-	-	B	A	A	A
HCM 95th %tile Q(veh)	-	-	0.5	0.1	0.1	-

Lanes, Volumes, Timings  
12: Jefferson St & Reserve Ave

2020 Background AM  
3/26/2015

Lane Group	EFL	EBT	EFR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	221	32	21	0	32	126	53	362	5	163	257	173
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	15	15	12	12	12	11	11	11	11	11	15
Grade (%)			0%			0%			-5%			0%
Storage Length (ft)	0		0	100		0	100		0	220		80
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	25			100			150			180		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00
Fr <sub>t</sub>		0.941			0.881			0.998				0.850
Flt Protected	0.950						0.950			0.950		
Satd. Flow (prot)	1593	1735	0	1676	1477	0	1578	1658	0	1540	3079	1568
Flt Permitted	0.638						0.544			0.429		
Satd. Flow (perm)	1070	1735	0	1676	1477	0	904	1658	0	695	3079	1568
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		23			137			1				188
Link Speed (mph)		30			30			30				30
Link Distance (ft)		551			718			1530				504
Travel Time (s)		12.5			16.3			34.8				11.5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	240	35	23	0	35	137	58	393	5	177	279	188
Shared Lane Traffic (%)												
Lane Group Flow (vph)	240	58	0	0	172	0	58	398	0	177	279	188
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(ft)		12			12			11				11
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.14	1.01	1.01	1.14	1.14	1.14	1.16	1.16	1.16	1.19	1.19	1.01
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100		20	100	20
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94				94
Detector 2 Size(ft)		6			6			6				6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	

Lanes, Volumes, Timings  
12: Jefferson St & Reserve Ave

2020 Background AM  
3/26/2015



Lane Group	FPL	FPT	FPR	VAL	NET	WTR	NRI	NBT	NBR	SGL	SBT	SBR
Permitted Phases	4			8			2			6		6
Detector Phase	4	4		8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		4.0	30.0		4.0	30.0	30.0
Minimum Split (s)	22.0	22.0		22.0	22.0		18.0	36.0		10.0	36.0	36.0
Total Split (s)	26.0	26.0		26.0	26.0		18.0	38.0		16.0	36.0	36.0
Total Split (%)	32.5%	32.5%		32.5%	32.5%		22.5%	47.5%		20.0%	45.0%	45.0%
Maximum Green (s)	20.0	20.0		20.0	20.0		12.0	32.0		10.0	30.0	30.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Lead/Lag							Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		0.2	6.0		0.2	6.0	6.0
Recall Mode	Max	Max		Max	Max		Max	None		Max	None	None
Walk Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	5.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0			11.0			11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0			0			0	0
Act Effct Green (s)	20.0	20.0			20.0		44.0	32.0		40.0	30.0	30.0
Actuated g/C Ratio	0.25	0.25			0.25		0.55	0.40		0.50	0.38	0.38
v/c Ratio	0.90	0.13			0.36		0.10	0.60		0.39	0.24	0.27
Control Delay	66.5	16.8			9.7		7.2	23.6		10.5	17.9	3.9
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	66.5	16.8			9.7		7.2	23.6		10.5	17.9	3.9
LOS	E	B			A		A	C		B	B	A
Approach Delay		56.8			9.7			21.5			11.8	
Approach LOS		E			A			C			B	

**Intersection Summary**

Area Type: CBD

Cycle Length: 80

Actuated Cycle Length: 80

Natural Cycle: 80

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 22.9

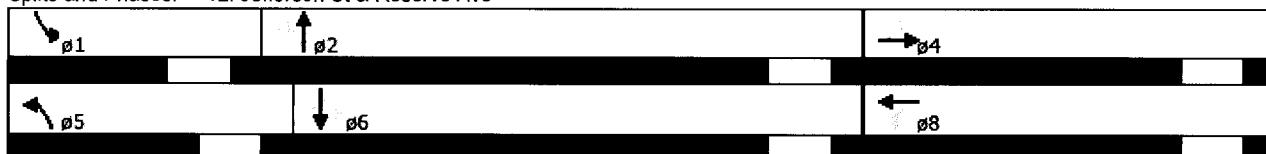
Intersection LOS: C

Intersection Capacity Utilization 79.1%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 12: Jefferson St & Reserve Ave



HCM 2010 Signalized Intersection Summary  
12: Jefferson St & Reserve Ave

2020 Background AM  
3/26/2015

Movement	EBL	E BT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑		↑	↑		↑	↑		↑	↑↑	↑
Volume (veh/h)	221	32	21	0	32	126	53	362	5	163	257	173
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1676	1744	1778	1676	1676	1710	1718	1718	1753	1676	1676	1744
Adj Flow Rate, veh/h	240	35	23	0	35	137	58	393	5	177	279	0
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	254	246	162	90	75	293	654	677	9	483	1194	556
Arrive On Green	0.25	0.25	0.25	0.00	0.25	0.25	0.15	0.40	0.40	0.13	0.38	0.00
Sat Flow, veh/h	1087	983	646	1206	299	1171	1637	1693	22	1597	3185	1482
Grp Volume(v), veh/h	240	0	58	0	0	172	58	0	398	177	279	0
Grp Sat Flow(s), veh/h/ln	1087	0	1629	1206	0	1470	1637	0	1715	1597	1593	1482
Q Serve(g_s), s	12.0	0.0	2.2	0.0	0.0	8.0	1.4	0.0	14.5	5.0	4.8	0.0
Cycle Q Clear(g_c), s	20.0	0.0	2.2	0.0	0.0	8.0	1.4	0.0	14.5	5.0	4.8	0.0
Prop In Lane	1.00		0.40	1.00		0.80	1.00		0.01	1.00		1.00
Lane Grp Cap(c), veh/h	254	0	407	90	0	367	654	0	686	483	1194	556
V/C Ratio(X)	0.95	0.00	0.14	0.00	0.00	0.47	0.09	0.00	0.58	0.37	0.23	0.00
Avail Cap(c_a), veh/h	254	0	407	90	0	367	654	0	686	483	1194	556
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	35.9	0.0	23.3	0.0	0.0	25.5	9.5	0.0	18.8	12.5	17.1	0.0
Incr Delay (d2), s/veh	44.1	0.0	0.7	0.0	0.0	4.2	0.3	0.0	2.9	2.1	0.4	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	8.4	0.0	1.1	0.0	0.0	3.6	0.7	0.0	7.4	2.4	2.2	0.0
LnGrp Delay(d), s/veh	80.0	0.0	24.1	0.0	0.0	29.7	9.8	0.0	21.7	14.6	17.5	0.0
LnGrp LOS	E		C			C	A		C	B	B	
Approach Vol, veh/h		298			172				456			456
Approach Delay, s/veh		69.1			29.7				20.2			16.4
Approach LOS		E			C				C			B

Time	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	16.0	38.0		26.0	18.0	36.0		26.0
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0
Max Green Setting (Gmax), s	10.0	32.0		20.0	12.0	30.0		20.0
Max Q Clear Time (g_c+l1), s	7.0	16.5		22.0	3.4	6.8		10.0
Green Ext Time (p_c), s	0.0	7.7		0.0	0.0	10.0		1.8

Intersection Summary	
HCM 2010 Ctrl Delay	30.7
HCM 2010 LOS	C

	EB	WB	NB	SB
Crosswalk Length (ft)	39.1	36.5	46.3	45.1
Crosswalk Width (ft)	12.0	12.0	12.0	12.0
Total Number of Lanes Crossed	3	3	4	4
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	6	2	4	8
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (mph)	30	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-	-
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-	-
Pedestrian Delay (s/p)	40.0	40.0	40.0	40.0
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.13	2.07	2.32	2.48
Pedestrian Crosswalk LOS	B	B	B	B

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Two Way Analysis cannot be performed on Signalized Intersection.

## Lanes, Volumes, Timings

2020 Background PM

3: Jefferson/Jefferson St &amp; McClanahan St/Yellow Mountain Rd

3/26/2015

	EBL	EBT	EPR	WSL	WBT	WBL	NBL	MBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	189	158	21	5	63	11	63	74	5	74	142	184
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	10	10	10	12	16	12	11	11	10
Grade (%)					-6%			-4%			4%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99			1.00	0.97		0.99			0.99	0.94
Frt		0.992				0.850		0.996				0.850
Flt Protected		0.975			0.997			0.978			0.983	
Satd. Flow (prot)	0	1642	0	0	1639	1397	0	1680	0	0	1582	1291
Flt Permitted		0.800			0.972			0.772			0.836	
Satd. Flow (perm)	0	1338	0	0	1597	1350	0	1310	0	0	1335	1214
Right Turn on Red			No			Yes			Yes		Yes	
Satd. Flow (RTOR)						41		2			200	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		368			600			400			744	
Travel Time (s)		8.4			13.6			9.1			16.9	
Conf. Peds. (#/hr)	9		7	7		9	25		19	19		25
Conf. Bikes (#/hr)									1			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	0%	0%	0%	0%	0%	2%	4%	0%	0%	1%	3%
Parking (#/hr)	0	0	0				0	0	0			
Adj. Flow (vph)	205	172	23	5	68	12	68	80	5	80	154	200
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	400	0	0	73	12	0	153	0	0	234	200
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.16	1.13	1.16	1.20	1.20	1.20	1.12	1.09	1.12	1.22	1.22	1.28
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		

## Lanes, Volumes, Timings

2020 Background PM

## 3: Jefferson/Jefferson St &amp; McClanahan St/Yellow Mountain Rd

3/26/2015



Lane Group	EPL	EST	EPR	NBL	NBT	NBR	NRT	NBS	SLT	SBT	SRT
Tum Type	Perm	NA		Perm	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases			4			8		2		6	6
Permitted Phases	4				8	8	2		6	31.0	31.0
Detector Phase	4	4		8	8	8	2	2	6	6	6
Switch Phase											
Minimum Initial (s)	12.0	12.0		12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Minimum Split (s)	31.0	31.0		31.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0
Total Split (s)	45.0	45.0		45.0	45.0	45.0	35.0	35.0	35.0	35.0	35.0
Total Split (%)	56.3%	56.3%		56.3%	56.3%	56.3%	43.8%	43.8%	43.8%	43.8%	43.8%
Maximum Green (s)	39.0	39.0		39.0	39.0	39.0	29.0	29.0	29.0	29.0	29.0
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0			0.0	0.0		0.0		0.0	0.0	0.0
Total Lost Time (s)		6.0			6.0	6.0		6.0		6.0	6.0
Lead/Lag											
Lead-Lag Optimize?											
Vehicle Extension (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Recall Mode	None	None		None	None	Min	Min	Min	Min	Min	Min
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)	18.0	18.0		18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0
Pedestrian Calls (#/hr)	16	16		16	16	44	44	44	44	44	44
Act Effct Green (s)	23.8			23.8	23.8		18.7			18.7	18.7
Actuated g/C Ratio	0.43			0.43	0.43		0.34			0.34	0.34
v/c Ratio	0.70			0.11	0.02		0.35			0.52	0.37
Control Delay	21.0			10.6	0.2		18.2			21.4	5.1
Queue Delay	0.0			0.0	0.0		0.0			0.0	0.0
Total Delay	21.0			10.6	0.2		18.2			21.4	5.1
LOS	C			B	A		B			C	A
Approach Delay	21.0			9.2			18.2			13.9	
Approach LOS	C			A			B			B	

## Intersection Summary

Area Type: CBD

Cycle Length: 80

Actuated Cycle Length: 55.5

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.70

Intersection Signal Delay: 16.8

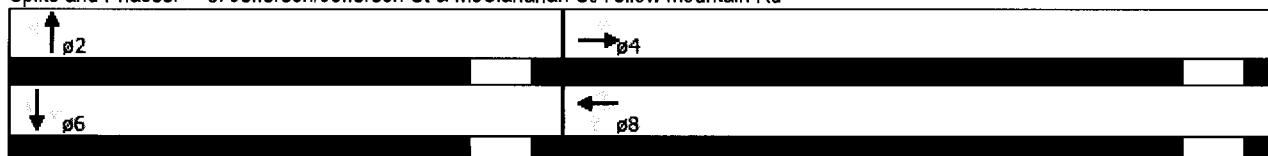
Intersection LOS: B

Intersection Capacity Utilization 76.4%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 3: Jefferson/Jefferson St &amp; McClanahan St/Yellow Mountain Rd



HCM 2010 Signalized Intersection Summary  
3: Jefferson/Jefferson St & McClanahan St/Yellow Mountain Rd

2020 Background PM  
3/26/2015

Movement	EEL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	189	158	21	5	63	11	63	74	5	74	142	184
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	0.98		0.94	0.97		0.96
Parking Bus, Adj	1.00	1.00	0.90	1.00	1.00	1.00	1.00	1.00	0.90	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1693	1734	1693	1761	1761	1761	1744	1761	1744	1676	1665	1627
Adj Flow Rate, veh/h	205	172	23	5	68	12	68	80	5	80	154	200
Adj No. of Lanes	0	1	0	0	1	1	0	1	0	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0	4	4	4	1	1	3
Cap, veh/h	351	259	31	92	702	610	226	220	12	236	393	466
Arrive On Green	0.41	0.41	0.41	0.41	0.41	0.41	0.35	0.35	0.35	0.35	0.35	0.35
Sat Flow, veh/h	590	628	74	37	1703	1481	352	629	33	400	1124	1334
Grp Volume(v), veh/h	400	0	0	73	0	12	153	0	0	234	0	200
Grp Sat Flow(s), veh/h/ln	1292	0	0	1740	0	1481	1013	0	0	1524	0	1334
Q Serve(g_s), s	11.2	0.0	0.0	0.0	0.0	0.2	2.0	0.0	0.0	0.0	0.0	5.8
Cycle Q Clear(g_c), s	13.1	0.0	0.0	1.3	0.0	0.2	7.4	0.0	0.0	5.4	0.0	5.8
Prop In Lane	0.51		0.06	0.07		1.00	0.44		0.03	0.34		1.00
Lane Grp Cap(c), veh/h	640	0	0	793	0	610	458	0	0	629	0	466
V/C Ratio(X)	0.62	0.00	0.00	0.09	0.00	0.02	0.33	0.00	0.00	0.37	0.00	0.43
Avail Cap(c_a), veh/h	1099	0	0	1406	0	1146	716	0	0	954	0	768
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.4	0.0	0.0	9.1	0.0	8.8	12.6	0.0	0.0	12.4	0.0	12.5
Incr Delay (d2), s/veh	1.7	0.0	0.0	0.1	0.0	0.0	0.7	0.0	0.0	0.6	0.0	1.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	5.0	0.0	0.0	0.6	0.0	0.1	1.8	0.0	0.0	2.6	0.0	2.2
LnGrp Delay(d), s/veh	14.1	0.0	0.0	9.2	0.0	8.8	13.3	0.0	0.0	13.0	0.0	13.6
LnGrp LOS	B		A		A	B			B		B	
Approach Vol, veh/h		400			85			153			434	
Approach Delay, s/veh		14.1			9.1			13.3			13.3	
Approach LOS		B			A			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		23.6		26.8		23.6		26.8				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		29.0		39.0		29.0		39.0				
Max Q Clear Time (g_c+l1), s		9.4		15.1		7.8		3.3				
Green Ext Time (p_c), s		5.1		5.1		5.3		5.8				
Intersection Summary												
HCM 2010 Ctrl Delay			13.3									
HCM 2010 LOS			B									

Approach	EB	WB	NB	SB
Crosswalk Length (ft)	29.6	32.0	28.2	38.3
Crosswalk Width (ft)	12.0	12.0	12.0	12.0
Total Number of Lanes Crossed	2	3	2	3
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	6	2	4	8
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (mph)	30	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-	-
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-	-
Pedestrian Delay (s/p)	40.0	40.0	40.0	40.0
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.08	2.06	1.88	2.18
Pedestrian Crosswalk LOS	B	B	A	B

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Two Way Analysis cannot be performed on Signalized Intersection.

Lanes, Volumes, Timings  
6: Jefferson St & Weller Ave/Flannagan Dr

2020 Background PM  
3/26/2015

Lane Group	EBS	FRT	EBR	WBL	WT	WBR	NBL	NAT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↓	→	↓	↙	←	↖	↑	↖	↗	↙	↓
Volume (vph)	47	47	58	26	5	32	5	242	26	37	315	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	14	14	11	11	12	12	16	12	12	12	12
Grade (%)					-3%			-6%			-5%	
Storage Length (ft)	0		0	0		0	0		80	0		85
Storage Lanes	1		0	0		1	0		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor	0.99				1.00			1.00			1.00	0.99
Fr <sub>t</sub>	0.917					0.850		0.987				0.850
Flt Protected	0.950				0.959			0.999				0.995
Satd. Flow (prot)	1554	1613	0	0	1556	1341	0	1716	0	0	3255	1461
Flt Permitted	0.736				0.681			0.992				0.898
Satd. Flow (perm)	1204	1613	0	0	1102	1341	0	1703	0	0	2938	1441
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)	63					41		9				63
Link Speed (mph)	30				30			30				30
Link Distance (ft)	138				151			744				1530
Travel Time (s)	3.1				3.4			16.9				34.8
Confl. Peds. (#/hr)			4	4			2		1	1		2
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	8%	0%	5%	4%	0%	10%	0%	3%	4%	0%	2%	2%
Parking (#/hr)								0	0			
Adj. Flow (vph)	51	51	63	28	5	35	5	263	28	40	342	63
Shared Lane Traffic (%)												
Lane Group Flow (vph)	51	114	0	0	33	35	0	296	0	0	382	63
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(ft)	13				13			11				11
Link Offset(ft)	0				0			0				0
Crosswalk Width(ft)	16				16			16				16
Two way Left Turn Lane												
Headway Factor	1.10	1.05	1.05	1.17	1.17	1.12	1.10	1.07	1.10	1.11	1.11	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	

Lanes, Volumes, Timings  
6: Jefferson St & Weller Ave/Flannagan Dr

2020 Background PM

3/26/2015



Lane Group	EBL	EBT	EBC	WBL	WBT	WBC	NBL	NBT	NBC	SBL	SBT	SBC
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases		4			8		8	2			6	
Permitted Phases	4			8	8	8	2			6		6
Detector Phase	4	4		8	8	8	2	2		6	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	12.0	12.0		12.0	12.0	12.0
Minimum Split (s)	31.0	31.0		22.0	22.0	22.0	22.0	22.0		34.0	34.0	34.0
Total Split (s)	38.0	38.0		38.0	38.0	38.0	42.0	42.0		42.0	42.0	42.0
Total Split (%)	47.5%	47.5%		47.5%	47.5%	47.5%	52.5%	52.5%		52.5%	52.5%	52.5%
Maximum Green (s)	32.0	32.0		32.0	32.0	32.0	36.0	36.0		36.0	36.0	36.0
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0			0.0	0.0		0.0			0.0	0.0
Total Lost Time (s)	6.0	6.0			6.0	6.0		6.0			6.0	6.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	4.5	4.5		4.5	4.5	4.5	6.0	6.0		6.0	6.0	6.0
Recall Mode	None	None		None	None	None	Min	Min		Min	Min	Min
Walk Time (s)	7.0	7.0								7.0	7.0	7.0
Flash Dont Walk (s)	18.0	18.0								21.0	21.0	21.0
Pedestrian Calls (#/hr)	4	4								3	3	3
Act Effct Green (s)	10.7	10.7			10.7	10.7		21.4			21.4	21.4
Actuated g/C Ratio	0.27	0.27			0.27	0.27		0.53			0.53	0.53
v/c Ratio	0.16	0.24			0.11	0.09		0.33			0.25	0.08
Control Delay	13.1	8.0			12.7	5.0		9.9			8.7	3.6
Queue Delay	0.0	0.0			0.0	0.0		0.0			0.0	0.0
Total Delay	13.1	8.0			12.7	5.0		9.9			8.7	3.6
LOS	B	A			B	A		A			A	A
Approach Delay		9.5			8.7			9.9			8.0	
Approach LOS		A			A			A			A	

**Intersection Summary**

Area Type: CBD

Cycle Length: 80

Actuated Cycle Length: 40.3

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.33

Intersection Signal Delay: 8.9

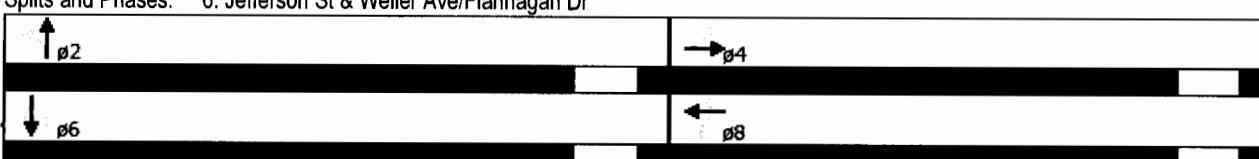
Intersection LOS: A

Intersection Capacity Utilization 51.9%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 6: Jefferson St & Weller Ave/Flannagan Dr



HCM 2010 Signalized Intersection Summary  
6: Jefferson St & Weller Ave/Flannagan Dr

2020 Background PM  
3/26/2015

Movement	EGL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑ ↗	↑ ↘	↗ ↙	↖ ↖	↖ ↙	↖ ↘	↗ ↖	↗ ↙	↖ ↘	↑ ↗	↑ ↙	↖ ↘
Volume (veh/h)	47	47	58	26	5	32	5	242	26	37	315	58
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	1.00		0.99	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.90	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1647	1731	1778	1736	1679	1578	1761	1778	1761	1753	1722	1718
Adj Flow Rate, veh/h	51	51	63	28	5	35	5	263	28	40	342	63
Adj No. of Lanes	1	1	0	0	1	1	0	1	0	0	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	8	0	0	0	0	10	3	3	3	2	2	2
Cap, veh/h	356	151	187	328	43	286	97	670	70	199	1374	693
Arrive On Green	0.22	0.22	0.22	0.22	0.22	0.22	0.47	0.47	0.47	0.47	0.47	0.47
Sat Flow, veh/h	1195	703	869	728	202	1329	6	1410	148	184	2893	1459
Grp Volume(v), veh/h	51	0	114	33	0	35	296	0	0	202	180	63
Grp Sat Flow(s),veh/h/ln	1195	0	1572	930	0	1329	1564	0	0	1589	1489	1459
Q Serve(g_s), s	1.5	0.0	2.4	0.4	0.0	0.8	0.0	0.0	0.0	0.0	2.8	0.9
Cycle Q Clear(g_c), s	4.3	0.0	2.4	2.8	0.0	0.8	4.7	0.0	0.0	2.7	2.8	0.9
Prop In Lane	1.00		0.55	0.85		1.00	0.02		0.09	0.20		1.00
Lane Grp Cap(c), veh/h	356	0	338	372	0	286	837	0	0	866	707	693
V/C Ratio(X)	0.14	0.00	0.34	0.09	0.00	0.12	0.35	0.00	0.00	0.23	0.25	0.09
Avail Cap(c_a), veh/h	1087	0	1298	1106	0	1098	1540	0	0	1551	1384	1356
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.9	0.0	12.9	12.9	0.0	12.3	6.6	0.0	0.0	6.0	6.1	5.6
Incr Delay (d2), s/veh	0.3	0.0	1.0	0.2	0.0	0.3	0.9	0.0	0.0	0.5	0.7	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	1.1	0.3	0.0	0.3	2.2	0.0	0.0	1.4	1.3	0.4
LnGrp Delay(d),s/veh	15.2	0.0	13.9	13.1	0.0	12.6	7.5	0.0	0.0	6.5	6.8	5.8
LnGrp LOS	B	B	B		B	A			A	A	A	
Approach Vol, veh/h		165			68			296			445	
Approach Delay, s/veh		14.3			12.8			7.5			6.5	
Approach LOS		B			B			A			A	
Times	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	24.4		14.3		24.4		14.3					
Change Period (Y+Rc), s	6.0		6.0		6.0		6.0					
Max Green Setting (Gmax), s	36.0		32.0		36.0		32.0					
Max Q Clear Time (g_c+l1), s	6.7		6.3		4.8		4.8					
Green Ext Time (p_c), s	11.7		2.0		12.0		2.0					
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			8.6									
HCM 2010 LOS			A									

Approach	EB	WB	NB	SB
Crosswalk Length (ft)	58.2	45.3	47.5	58.4
Crosswalk Width (ft)	12.0	12.0	12.0	12.0
Total Number of Lanes Crossed	4	3	3	4
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	6	2	4	8
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (mph)	30	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-	-
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-	-
Pedestrian Delay (s/p)	40.0	40.0	40.0	40.0
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.19	2.01	2.18	2.33
Pedestrian Crosswalk LOS	B	B	B	B

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Two Way Analysis cannot be performed on Signalized Intersection.



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↑	↑	↑↓		↓	↑
Volume (vph)	53	16	152	58	95	383
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	14	15	10	10	10	10
Lane Util. Factor	1.00	1.00	0.95	0.95	0.95	0.95
Ped Bike Factor						
Fr <sub>t</sub>		0.850	0.959			
Flt Protected	0.950					0.990
Satd. Flow (prot)	1699	1599	2838	0	0	2990
Flt Permitted	0.950					0.990
Satd. Flow (perm)	1699	1599	2838	0	0	2990
Link Speed (mph)	30		30			30
Link Distance (ft)	138		244			240
Travel Time (s)	3.1		5.5			5.5
Conf. Peds. (#/hr)				2	2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	0%	9%	2%	0%
Adj. Flow (vph)	58	17	165	63	103	416
Shared Lane Traffic (%)						
Lane Group Flow (vph)	58	17	228	0	0	519
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	14		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.05	1.01	1.25	1.25	1.25	1.25
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

#### Intersection Summary

Area Type: CBD

Control Type: Unsignalized

Intersection Capacity Utilization 35.4%

ICU Level of Service A

Analysis Period (min) 15

**Intersection**

Int Delay, s/veh 2.5

Movement	WBL	WBR	NST	NBR	SBL	SBT
Vol, veh/h	53	16	152	58	95	383
Conflicting Peds, #/hr	0	0	0	2	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	0	0	9	2	0
Mvmt Flow	58	17	165	63	103	416

Major/Minor	Minor 1	Major 1	Major 2
Conflicting Flow All	612	116	0 0 228 0
Stage 1	197	-	- - - -
Stage 2	415	-	- - - -
Critical Hdwy	6.84	6.9	- - 4.14 -
Critical Hdwy Stg 1	5.84	-	- - - -
Critical Hdwy Stg 2	5.84	-	- - - -
Follow-up Hdwy	3.52	3.3	- - 2.22 -
Pot Cap-1 Maneuver	425	921	- - 1337 -
Stage 1	817	-	- - - -
Stage 2	635	-	- - - -
Platoon blocked, %		- -	- -
Mov Cap-1 Maneuver	382	920	- - 1335 -
Mov Cap-2 Maneuver	382	-	- - - -
Stage 1	817	-	- - - -
Stage 2	571	-	- - - -

Approach	WB	NB	SB
HCM Control Delay, s	14.5	0	1.8
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBL n1	WBL n2	SBL	SBT
Capacity (veh/h)	-	-	382	920	1335	-
HCM Lane V/C Ratio	-	-	0.151	0.019	0.077	-
HCM Control Delay (s)	-	-	16.1	9	7.9	0.3
HCM Lane LOS	-	-	C	A	A	A
HCM 95th %tile Q(veh)	-	-	0.5	0.1	0.3	-

Lanes, Volumes, Timings  
12: Jefferson St & Reserve Ave

2020 Background PM  
3/26/2015

Lane Group	EBL	EPT	EPR	WBL	WPT	Wes	NBL	NPT	Nes	SBL	SBT	SBR
Lane Configurations	↑	↑		↑	↑		↑	↑		↑	↑↑	↑
Volume (vph)	194	26	26	5	37	184	11	273	5	84	378	284
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	15	15	12	12	12	11	11	11	11	11	15
Grade (%)			0%			0%			-5%			0%
Storage Length (ft)	0			100		0	100		0	220		80
Storage Lanes	1			1		0	1		0	1		1
Taper Length (ft)	25			100			150			180		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00
Frt		0.925			0.875			0.998				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1593	1706	0	1593	1467	0	1578	1658	0	1540	3079	1568
Flt Permitted	0.511			0.720			0.414			0.576		
Satd. Flow (perm)	857	1706	0	1207	1467	0	688	1658	0	933	3079	1568
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)	28			200			1					309
Link Speed (mph)	30			30			30					30
Link Distance (ft)	551			718			1530					504
Travel Time (s)	12.5			16.3			34.8					11.5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	211	28	28	5	40	200	12	297	5	91	411	309
Shared Lane Traffic (%)												
Lane Group Flow (vph)	211	56	0	5	240	0	12	302	0	91	411	309
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(ft)	12			12			11					11
Link Offset(ft)	0			0			0					0
Crosswalk Width(ft)	16			16			16					16
Two way Left Turn Lane												
Headway Factor	1.14	1.01	1.01	1.14	1.14	1.14	1.16	1.16	1.16	1.19	1.19	1.01
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100		20	100	20
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94				94
Detector 2 Size(ft)		6			6			6				6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	

Lanes, Volumes, Timings  
12: Jefferson St & Reserve Ave

2020 Background PM  
3/26/2015



Lane Group	EBL	EST	EBR	NBL	NBT	NBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8			2			6		6
Detector Phase	4	4		8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		4.0	30.0		4.0	30.0	30.0
Minimum Split (s)	22.0	22.0		22.0	22.0		18.0	36.0		10.0	36.0	36.0
Total Split (s)	26.0	26.0		26.0	26.0		18.0	44.0		10.0	36.0	36.0
Total Split (%)	32.5%	32.5%		32.5%	32.5%		22.5%	55.0%		12.5%	45.0%	45.0%
Maximum Green (s)	20.0	20.0		20.0	20.0		12.0	38.0		4.0	30.0	30.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Lead/Lag							Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		0.2	6.0		0.2	6.0	6.0
Recall Mode	Max	Max		Max	Max		Max	None		Max	None	None
Walk Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	5.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0			11.0			11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0			0			0	0
Act Effct Green (s)	20.0	20.0		20.0	20.0		48.0	38.0		34.0	30.0	30.0
Actuated g/C Ratio	0.25	0.25		0.25	0.25		0.60	0.48		0.42	0.38	0.38
v/c Ratio	0.99	0.13		0.02	0.47		0.02	0.38		0.21	0.36	0.40
Control Delay	92.0	14.9		23.0	9.4		6.6	15.3		9.6	19.2	3.9
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	92.0	14.9		23.0	9.4		6.6	15.3		9.6	19.2	3.9
LOS	F	B		C	A		A	B		A	B	A
Approach Delay		75.9			9.7			14.9			12.3	
Approach LOS		E			A			B			B	

**Intersection Summary**

Area Type: CBD

Cycle Length: 80

Actuated Cycle Length: 80

Natural Cycle: 80

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.99

Intersection Signal Delay: 22.8

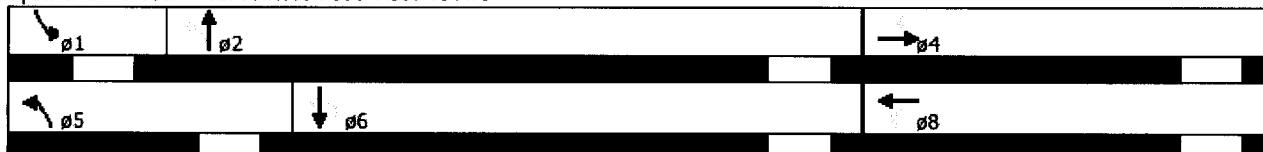
Intersection LOS: C

Intersection Capacity Utilization 76.9%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 12: Jefferson St & Reserve Ave



HCM 2010 Signalized Intersection Summary  
12: Jefferson St & Reserve Ave

2020 Background PM  
3/26/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBF
Lane Configurations	↑	↓		↑	↓		↑	↓		↑	↑↓	↑
Volume (veh/h)	194	26	26	5	37	184	11	273	5	84	378	284
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1676	1744	1778	1676	1676	1710	1718	1718	1753	1676	1676	1744
Adj Flow Rate, veh/h	211	28	28	5	40	200	12	297	5	91	411	0
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	195	200	200	359	61	304	588	800	13	520	1194	556
Arrive On Green	0.25	0.25	0.25	0.25	0.25	0.25	0.15	0.47	0.47	0.05	0.38	0.00
Sat Flow, veh/h	1022	801	801	1208	244	1218	1637	1685	28	1597	3185	1482
Grp Volume(v), veh/h	211	0	56	5	0	240	12	0	302	91	411	0
Grp Sat Flow(s), veh/h/ln	1022	0	1602	1208	0	1462	1637	0	1713	1597	1593	1482
Q Serve(g_s), s	8.2	0.0	2.2	0.3	0.0	11.8	0.3	0.0	9.0	2.8	7.4	0.0
Cycle Q Clear(g_c), s	20.0	0.0	2.2	2.4	0.0	11.8	0.3	0.0	9.0	2.8	7.4	0.0
Prop In Lane	1.00		0.50	1.00		0.83	1.00		0.02	1.00		1.00
Lane Grp Cap(c), veh/h	195	0	401	359	0	365	588	0	814	520	1194	556
V/C Ratio(X)	1.08	0.00	0.14	0.01	0.00	0.66	0.02	0.00	0.37	0.17	0.34	0.00
Avail Cap(c_a), veh/h	195	0	401	359	0	365	588	0	814	520	1194	556
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	37.8	0.0	23.3	24.3	0.0	26.9	8.7	0.0	13.4	14.0	17.9	0.0
Incr Delay (d2), s/veh	88.2	0.0	0.7	0.1	0.0	8.9	0.1	0.0	1.0	0.7	0.6	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	9.1	0.0	1.0	0.1	0.0	5.6	0.1	0.0	4.4	1.3	3.4	0.0
LnGrp Delay(d), s/veh	126.0	0.0	24.0	24.3	0.0	35.8	8.8	0.0	14.4	14.8	18.6	0.0
LnGrp LOS	F		C	C		D	A		B	B	B	
Approach Vol, veh/h		267			245				314			502
Approach Delay, s/veh		104.6			35.6				14.2			17.9
Approach LOS		F			D				B			B
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.0	44.0		26.0	18.0	36.0		26.0				
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s	4.0	38.0		20.0	12.0	30.0		20.0				
Max Q Clear Time (g_c+l1), s	4.8	11.0		22.0	2.3	9.4		13.8				
Green Ext Time (p_c), s	0.0	11.3		0.0	0.0	9.7		1.5				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			37.7									
HCM 2010 LOS			D									

Approach	SB	NB	SB	NB
Crosswalk Length (ft)	39.1	36.5	46.3	45.1
Crosswalk Width (ft)	12.0	12.0	12.0	12.0
Total Number of Lanes Crossed	3	3	4	4
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	6	2	4	8
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (mph)	30	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-	-
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-	-
Pedestrian Delay (s/p)	40.0	40.0	40.0	40.0
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.15	2.07	2.32	2.51
Pedestrian Crosswalk LOS	B	B	B	B

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Two Way Analysis cannot be performed on Signalized Intersection.

## Lanes, Volumes, Timings

2020 Buildout (Single Ln) AM

3: Jefferson/Jefferson St &amp; McClanahan St/Yellow Mountain Rd

3/26/2015

Lane Group	EPI	EPT	EPR	WBL	WBT	WBZ	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	254	21	32	5	147	115	26	259	5	38	85	128
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	10	10	10	12	16	12	11	11	10
Grade (%)					-6%				-4%			4%
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99				1.00	0.97		0.99			1.00	0.91
Frt	0.986					0.850		0.998				0.850
Flt Protected	0.960				0.998			0.996			0.985	
Satd. Flow (prot)	0	1579	0	0	1609	1397	0	1727	0	0	1526	1278
Flt Permitted	0.655				0.989			0.969			0.842	
Satd. Flow (perm)	0	1070	0	0	1594	1356	0	1671	0	0	1299	1163
Right Turn on Red			No			Yes			Yes			Yes
Satd. Flow (RTOR)						125		1				139
Link Speed (mph)	30				30			30			30	
Link Distance (ft)	368				600			400			394	
Travel Time (s)	8.4				13.6			9.1			9.0	
Confl. Peds. (#/hr)	6		13	13		6	45		16	16		45
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	0%	6%	0%	2%	0%	6%	2%	0%	8%	3%	4%
Parking (#/hr)	0	0	0				0	0	0			
Adj. Flow (vph)	276	23	35	5	160	125	28	282	5	41	92	139
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	334	0	0	165	125	0	315	0	0	133	139
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(ft)	0				0			0			0	
Link Offset(ft)	0				0			0			0	
Crosswalk Width(ft)	16				16			16			16	
Two way Left Turn Lane												
Headway Factor	1.16	1.13	1.16	1.20	1.20	1.20	1.12	1.09	1.12	1.22	1.22	1.28
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0		0.0		0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm

## Lanes, Volumes, Timings

2020 Buildout (Single Ln) AM

3: Jefferson/Jefferson St &amp; McClanahan St/Yellow Mountain Rd

3/26/2015



Lane Group	E1	E2T	E2R	W1T	W1R	W2T	W2R	N1T	N1R	S1T	S1R	S2T	S2R
Protected Phases		4				8					6		
Permitted Phases	4				8		8	2			6		6
Detector Phase	4	4		8	8	8	8	2	2		6	6	6
Switch Phase													
Minimum Initial (s)	12.0	12.0		12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Minimum Split (s)	31.0	31.0		31.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0
Total Split (s)	47.0	47.0		47.0	47.0	47.0	47.0	33.0	33.0	33.0	33.0	33.0	33.0
Total Split (%)	58.8%	58.8%		58.8%	58.8%	58.8%	41.3%	41.3%		41.3%	41.3%	41.3%	41.3%
Maximum Green (s)	41.0	41.0		41.0	41.0	41.0	27.0	27.0		27.0	27.0	27.0	27.0
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0			0.0	0.0			0.0			0.0	0.0	0.0
Total Lost Time (s)	6.0			6.0	6.0			6.0			6.0	6.0	6.0
Lead/Lag													
Lead-Lag Optimize?													
Vehicle Extension (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	4.5
Recall Mode	None	None		None	None	None	C-Min	C-Min		C-Min	C-Min	C-Min	C-Min
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0	7.0
Flash Dont Walk (s)	18.0	18.0		18.0	18.0	18.0	18.0	18.0		18.0	18.0	18.0	18.0
Pedestrian Calls (#/hr)	19	19		19	19	19	61	61		61	61	61	61
Act Effct Green (s)	31.9			31.9	31.9	31.9		36.1			36.1	36.1	36.1
Actuated g/C Ratio	0.40			0.40	0.40	0.40		0.45			0.45	0.45	0.45
v/c Ratio	0.78			0.26	0.20			0.42			0.23	0.23	0.23
Control Delay	33.5			15.5	3.1			19.3			11.9	1.8	
Queue Delay	0.0			0.0	0.0			0.0			0.0	0.0	
Total Delay	33.5			15.5	3.1			19.3			11.9	1.8	
LOS	C			B	A			B			B	A	
Approach Delay	33.5			10.1				19.3			6.7		
Approach LOS	C			B				B			A		

**Intersections Summary**

Area Type: CBD

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 57 (71%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 18.2

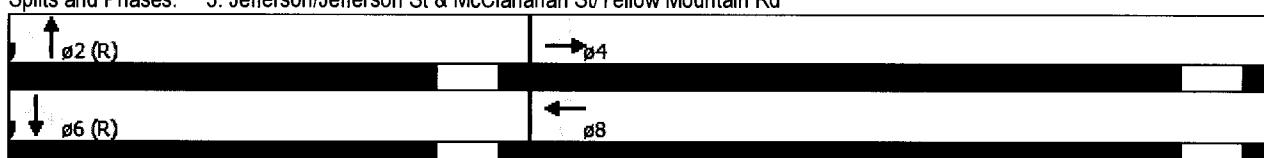
Intersection LOS: B

Intersection Capacity Utilization 70.5%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 3: Jefferson/Jefferson St &amp; McClanahan St/Yellow Mountain Rd



## HCM 2010 Signalized Intersection Summary

2020 Buildout (Single Ln) AM

3: Jefferson/Jefferson St &amp; McClanahan St/Yellow Mountain Rd

3/26/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	254	21	32	5	147	115	26	259	5	38	85	128
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	1.00		0.99	0.96		0.94	0.98		0.94
Parking Bus, Adj	1.00	1.00	0.90	1.00	1.00	1.00	1.00	1.00	0.90	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1693	1708	1693	1761	1728	1761	1744	1773	1744	1676	1603	1611
Adj Flow Rate, veh/h	276	23	35	5	160	125	28	282	5	41	92	139
Adj No. of Lanes	0	1	0	0	1	1	0	1	0	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	2	2	0	2	2	2	3	3	4
Cap, veh/h	388	33	40	52	767	661	78	581	10	196	396	520
Arrive On Green	0.45	0.45	0.45	0.45	0.45	0.45	0.40	0.40	0.40	0.67	0.67	0.67
Sat Flow, veh/h	683	73	88	13	1712	1475	71	1445	24	340	986	1293
Grp Volume(v), veh/h	334	0	0	165	0	125	315	0	0	133	0	139
Grp Sat Flow(s), veh/h/ln	844	0	0	1724	0	1475	1540	0	0	1326	0	1293
Q Serve(g_s), s	25.5	0.0	0.0	0.0	0.0	4.1	0.0	0.0	0.0	0.0	0.0	3.4
Cycle Q Clear(g_c), s	30.1	0.0	0.0	4.7	0.0	4.1	11.8	0.0	0.0	2.5	0.0	3.4
Prop In Lane	0.83		0.10	0.03		1.00	0.09		0.02	0.31		1.00
Lane Grp Cap(c), veh/h	460	0	0	819	0	661	668	0	0	592	0	520
V/C Ratio(X)	0.73	0.00	0.00	0.20	0.00	0.19	0.47	0.00	0.00	0.22	0.00	0.27
Avail Cap(c_a), veh/h	521	0	0	929	0	756	668	0	0	592	0	520
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	22.3	0.0	0.0	13.5	0.0	13.3	17.8	0.0	0.0	8.3	0.0	8.4
Incr Delay (d2), s/veh	5.4	0.0	0.0	0.2	0.0	0.2	2.4	0.0	0.0	0.9	0.0	1.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	7.5	0.0	0.0	2.2	0.0	1.7	5.6	0.0	0.0	1.2	0.0	1.4
LnGrp Delay(d), s/veh	27.7	0.0	0.0	13.7	0.0	13.6	20.2	0.0	0.0	9.2	0.0	9.7
LnGrp LOS	C		B		B	C			A		A	
Approach Vol, veh/h	334			290			315			272		
Approach Delay, s/veh	27.7			13.6			20.2			9.4		
Approach LOS	C		B			C			A		A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	38.2		41.8		38.2		41.8					
Change Period (Y+Rc), s	6.0		6.0		6.0		6.0					
Max Green Setting (Gmax), s	27.0		41.0		27.0		41.0					
Max Q Clear Time (g_c+l1), s	13.8		32.1		5.4		6.7					
Green Ext Time (p_c), s	4.3		3.7		5.5		7.4					
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay		18.3										
HCM 2010 LOS			B									

Approach	EB	WB	NB	SB
Crosswalk Length (ft)	29.8	32.2	28.2	35.0
Crosswalk Width (ft)	12.0	12.0	12.0	12.0
Total Number of Lanes Crossed	2	3	2	3
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	6	2	4	8
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (mph)	30	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-	-
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-	-
Pedestrian Delay (s/p)	40.0	40.0	40.0	40.0
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.04	2.06	1.94	2.26
Pedestrian Crosswalk LOS	B	B	A	B

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Two Way Analysis cannot be performed on Signalized Intersection.

Lanes, Volumes, Timings  
6: Jefferson St & Weller Ave/Flannagan Dr

2020 Buildout (Single Ln) AM

3/26/2015

Lane Group	EBL	EBT	EBC	WEL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	32	82	65	26	11	41	54	530	42	124	344	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	14	14	11	11	12	12	16	12	12	12	12
Grade (%)						-3%			-6%			-5%
Storage Length (ft)	0			0	0		0		80	0		85
Storage Lanes	1			0	0		1	0		0	0	1
Taper Length (ft)	25				25			25			25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor	0.99				0.99			1.00			1.00	
Frt	0.933					0.850		0.991				0.850
Flt Protected	0.950				0.966			0.996			0.987	
Satd. Flow (prot)	1472	1536	0	0	1560	1475	0	1918	0	0	3177	1433
Flt Permitted	0.731				0.740			0.919			0.662	
Satd. Flow (perm)	1133	1536	0	0	1184	1475	0	1770	0	0	2130	1433
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)	52					45		7				68
Link Speed (mph)	30				30			30			30	
Link Distance (ft)	138				151			350			1530	
Travel Time (s)	3.1				3.4			8.0			34.8	
Confl. Peds. (#/hr)			17	17					3	3		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	14%	9%	10%	0%	13%	0%	20%	1%	0%	2%	4%	4%
Adj. Flow (vph)	35	89	71	28	12	45	59	576	46	135	374	68
Shared Lane Traffic (%)												
Lane Group Flow (vph)	35	160	0	0	40	45	0	681	0	0	509	68
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(ft)	13				13			0			11	
Link Offset(ft)	0				0			0			0	
Crosswalk Width(ft)	16				16			16			16	
Two way Left Turn Lane												
Headway Factor	1.10	1.05	1.05	1.17	1.17	1.12	1.10	0.94	1.10	1.11	1.11	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Lanes, Volumes, Timings  
6: Jefferson St & Weller Ave/Flannagan Dr

2020 Buildout (Single Ln) AM

3/26/2015

Lane Group	EBL	EBT	EBC	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0		0.0		
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases		4			8		8	2			6	
Permitted Phases	4			8	8	8	2			6		6
Detector Phase	4	4		8	8	8	2	2		6	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	12.0	12.0		12.0	12.0	12.0
Minimum Split (s)	31.0	31.0		22.0	22.0	22.0	22.0	22.0		34.0	34.0	34.0
Total Split (s)	31.0	31.0		31.0	31.0	31.0	49.0	49.0		49.0	49.0	49.0
Total Split (%)	38.8%	38.8%		38.8%	38.8%	38.8%	61.3%	61.3%		61.3%	61.3%	61.3%
Maximum Green (s)	25.0	25.0		25.0	25.0	25.0	43.0	43.0		43.0	43.0	43.0
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	4.5	4.5		4.5	4.5	4.5	6.0	6.0		6.0	6.0	6.0
Recall Mode	None	None		None	None	None	C-Min	C-Min		C-Min	C-Min	C-Min
Walk Time (s)	7.0	7.0								7.0	7.0	7.0
Flash Dont Walk (s)	18.0	18.0								21.0	21.0	21.0
Pedestrian Calls (#/hr)	17	17								3	3	3
Act Effct Green (s)	15.9	15.9		15.9	15.9	15.9	52.1			52.1	52.1	52.1
Actuated g/C Ratio	0.20	0.20		0.20	0.20	0.20	0.65			0.65	0.65	0.65
v/c Ratio	0.15	0.46		0.17	0.14	0.14	0.59			0.37	0.07	
Control Delay	24.1	21.0		24.5	7.6	7.6	10.7			3.5	0.2	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0			0.0	0.0	
Total Delay	24.1	21.0		24.5	7.6	7.6	10.7			3.5	0.2	
LOS	C	C		C	A	A	B	B		A	A	
Approach Delay		21.6			15.5			10.7			3.1	
Approach LOS		C		B		B		B			A	

Intersection Summary

Area Type: CBD

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 44 (55%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.59

Intersection Signal Delay: 9.5

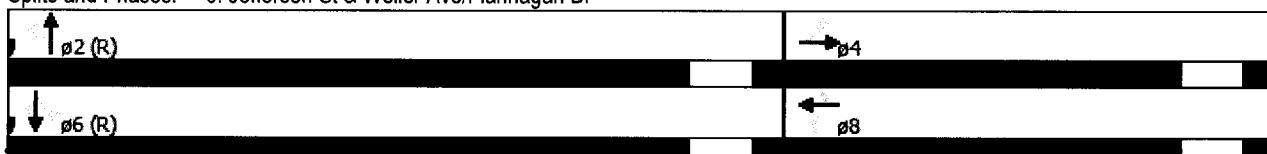
Intersection LOS: A

Intersection Capacity Utilization 91.4%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 6: Jefferson St & Weller Ave/Flannagan Dr



Baseline

thl/msa

Synchro 8 Report

Page 7

HCM 2010 Signalized Intersection Summary  
6: Jefferson St & Weller Ave/Flannagan Dr

2020 Buildout (Single Ln) AM  
3/26/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑	→	→	↓	←	←	↖	↖	↑	↖	↓
Volume (veh/h)	32	82	65	26	11	41	54	530	42	124	344	63
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A <sub>pbT</sub> )	0.97		0.98	0.99		0.96	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1560	1625	1778	1736	1671	1736	1761	1786	1761	1753	1694	1685
Adj Flow Rate, veh/h	35	89	71	28	12	45	59	576	46	135	374	68
Adj No. of Lanes	1	1	0	0	1	1	0	1	0	0	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	14	9	9	13	13	0	1	1	1	4	4	4
Cap, veh/h	218	186	149	188	66	319	109	915	71	424	1155	894
Arrive On Green	0.22	0.22	0.22	0.22	0.22	0.22	1.00	1.00	1.00	0.63	0.63	0.63
Sat Flow, veh/h	1093	829	661	495	292	1420	96	1463	113	561	1848	1430
Grp Volume(v), veh/h	35	0	160	40	0	45	681	0	0	217	292	68
Grp Sat Flow(s),veh/h/h/ln	1093	0	1490	787	0	1420	1672	0	0	945	1464	1430
Q Serve(g_s), s	2.3	0.0	7.5	1.2	0.0	2.0	0.0	0.0	0.0	6.7	7.5	1.5
Cycle Q Clear(g_c), s	10.9	0.0	7.5	8.6	0.0	2.0	0.0	0.0	0.0	7.9	7.5	1.5
Prop In Lane	1.00		0.44	0.70		1.00	0.09		0.07	0.62		1.00
Lane Grp Cap(c), veh/h	218	0	335	253	0	319	1094	0	0	664	915	894
V/C Ratio(X)	0.16	0.00	0.48	0.16	0.00	0.14	0.62	0.00	0.00	0.33	0.32	0.08
Avail Cap(c_a), veh/h	314	0	466	359	0	444	1094	0	0	664	915	894
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	0.90	0.90	0.90
Uniform Delay (d), s/veh	32.2	0.0	26.9	27.3	0.0	24.8	0.0	0.0	0.0	6.9	7.0	5.9
Incr Delay (d2), s/veh	0.6	0.0	1.8	0.5	0.0	0.3	2.7	0.0	0.0	1.2	0.8	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	3.2	0.8	0.0	0.8	0.8	0.0	0.0	2.5	3.2	0.6
LnGrp Delay(d),s/veh	32.8	0.0	28.7	27.7	0.0	25.2	2.7	0.0	0.0	8.1	7.8	6.1
LnGrp LOS	C	C	C	C	C	A			A	A	A	
Approach Vol, veh/h		195			85			681		577		
Approach Delay, s/veh		29.5			26.4			2.7		7.7		
Approach LOS		C			C			A		A		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	56.0		24.0		56.0		24.0					
Change Period (Y+Rc), s	6.0		6.0		6.0		6.0					
Max Green Setting (Gmax), s	43.0		25.0		43.0		25.0					
Max Q Clear Time (g_c+l1), s	2.0		12.9		9.9		10.6					
Green Ext Time (p_c), s	27.2		1.8		23.4		2.0					
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			9.3									
HCM 2010 LOS			A									

Approach	EB	WB	NB	SB
Crosswalk Length (ft)	59.0	45.3	40.1	58.4
Crosswalk Width (ft)	12.0	12.0	12.0	12.0
Total Number of Lanes Crossed	4	3	3	4
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	6	2	4	8
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (mph)	30	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-	-
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-	-
Pedestrian Delay (s/p)	40.0	40.0	40.0	40.0
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.22	2.06	2.32	2.44
Pedestrian Crosswalk LOS	B	B	B	B

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Two Way Analysis cannot be performed on Signalized Intersection.



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↑ ↗	↗ ↘	↑ ↗	↗ ↘	↙ ↘	↖ ↗
Volume (vph)	86	41	179	92	86	320
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	14	15	10	10	10	10
Lane Util. Factor	1.00	1.00	0.95	0.95	0.95	0.95
Fr <sub>t</sub>		0.850	0.949			
Flt Protected	0.950					0.990
Satd. Flow (prot)	1604	1537	2783	0	0	2930
Flt Permitted	0.950					0.990
Satd. Flow (perm)	1604	1537	2783	0	0	2930
Link Speed (mph)	30		30			30
Link Distance (ft)	138		244			240
Travel Time (s)	3.1		5.5			5.5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	8%	4%	0%	10%	8%	1%
Adj. Flow (vph)	93	45	195	100	93	348
Shared Lane Traffic (%)						
Lane Group Flow (vph)	93	45	295	0	0	441
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	14		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.05	1.01	1.25	1.25	1.25	1.25
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

#### Intersection Summary

Area Type: CBD

Control Type: Unsignalized

Intersection Capacity Utilization 36.7%

ICU Level of Service A

Analysis Period (min) 15

**Intersection**

Int Delay, s/veh 3.4

Movement	WBL	WBR	NBT	NBR	SBL	SBR
Vol, veh/h	86	41	179	92	86	320
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	8	4	0	10	8	1
Mvmt Flow	93	45	195	100	93	348

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	606	147	0 0 295 0
Stage 1	245	-	- - - -
Stage 2	361	-	- - - -
Critical Hdwy	6.96	6.98	- - 4.26 -
Critical Hdwy Stg 1	5.96	-	- - - -
Critical Hdwy Stg 2	5.96	-	- - - -
Follow-up Hdwy	3.58	3.34	- - 2.28 -
Pot Cap-1 Maneuver	415	867	- - 1221 -
Stage 1	755	-	- - - -
Stage 2	658	-	- - - -
Platoon blocked, %		-	- - - -
Mov Cap-1 Maneuver	376	867	- - 1221 -
Mov Cap-2 Maneuver	376	-	- - - -
Stage 1	755	-	- - - -
Stage 2	596	-	- - - -

Approach	WB	NB	SB
HCM Control Delay, s	15	0	2
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBL	WBLn1	WBLn2	SBL	SBR
Capacity (veh/h)	-	-	376	867	1221	-	
HCM Lane V/C Ratio	-	-	0.249	0.051	0.077	-	
HCM Control Delay (s)	-	-	17.7	9.4	8.2	0.3	
HCM Lane LOS	-	-	C	A	A	A	
HCM 95th %tile Q(veh)	-	-	1	0.2	0.2	-	

Lanes, Volumes, Timings  
11: Jefferson St & Site Entr

2020 Buildout (Single Ln) AM  
3/26/2015

Lane Group	WBL	WER	NBT	NBR	SBL	SBT
Lane Configurations	Y		Y			Y
Volume (vph)	67	158	467	161	251	184
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%		-6%			4%
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95
Ped Bike Factor						
Fr <sub>t</sub>	0.905		0.965			
Flt Protected	0.985					0.972
Satd. Flow (prot)	1494	0	1666	0	0	3034
Flt Permitted	0.985					0.972
Satd. Flow (perm)	1494	0	1666	0	0	3034
Link Speed (mph)	30		30			30
Link Distance (ft)	303		394			350
Travel Time (s)	6.9		9.0			8.0
Confl. Peds. (#/hr)	50			20	20	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	73	172	508	175	273	200
Shared Lane Traffic (%)						
Lane Group Flow (vph)	245	0	683	0	0	473
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		15			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.14	1.14	1.10	1.10	1.17	1.17
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: CBD  
Control Type: Unsignalized  
Intersection Capacity Utilization 79.1%  
Analysis Period (min) 15

ICU Level of Service D

**Intersection**

Int Delay, s/veh 27.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	67	158	467	161	251	184
Conflicting Peds, #/hr	50	0	0	20	20	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	-6	-	-	4
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	73	172	508	175	273	200

Major/Minor	Minor 1	Major 1	Major 2
Conflicting Flow All	1291	665	0 0 733 0
Stage 1	645	-	- -
Stage 2	646	-	- -
Critical Hdwy	6.63	6.23	- - 4.12 -
Critical Hdwy Stg 1	5.43	-	- -
Critical Hdwy Stg 2	5.83	-	- -
Follow-up Hdwy	3.519	3.319	- - 2.218 -
Pot Cap-1 Maneuver	167	459	- - 872 -
Stage 1	521	-	- -
Stage 2	485	-	- -
Platoon blocked, %		- -	- -
Mov Cap-1 Maneuver	101	433	- - 857 -
Mov Cap-2 Maneuver	101	-	- -
Stage 1	499	-	- -
Stage 2	306	-	- -

Approach	WB	NB	SB
HCM Control Delay, s	142.3	0	6.6
HCM LOS	F	-	-

Minor Lane/Major Mvmt	NBT	NBR	WBL	Ln1	SBL	SBT
Capacity (veh/h)	-	-	219	857	-	-
HCM Lane V/C Ratio	-	-	1.117	0.318	-	-
HCM Control Delay (s)	-	-	142.3	11.2	0.5	-
HCM Lane LOS	-	-	F	B	A	-
HCM 95th %tile Q(veh)	-	-	11.3	1.4	-	-

Lanes, Volumes, Timings  
14: Jefferson St & Reserve Ave

2020 Buildout (Single Ln) AM  
3/26/2015

Lane Group	EGL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SR
Lane Configurations	↑	↑	51	0	32	126	53	497	5	65	480	173
Volume (vph)	221	32		0	32	126	53	497	5	65	480	173
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	15	15	12	12	12	11	11	11	12	12	15
Grade (%)			0%			0%		-5%			0%	
Storage Length (ft)	0		0	100		0	100		0	220		80
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	25			100			150			180		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00
Frt		0.908			0.881			0.999				0.850
Flt Protected	0.950						0.950			0.950		
Satd. Flow (prot)	1593	1674	0	1676	1477	0	1578	1659	0	1593	3185	1568
Flt Permitted	0.638						0.344			0.396		
Satd. Flow (perm)	1070	1674	0	1676	1477	0	571	1659	0	664	3185	1568
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)	55				137			1				205
Link Speed (mph)	30				30			30				30
Link Distance (ft)	551				718			1530				504
Travel Time (s)	12.5				16.3			34.8				11.5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	240	35	55	0	35	137	58	540	5	71	522	188
Shared Lane Traffic (%)												
Lane Group Flow (vph)	240	90	0	0	172	0	58	545	0	71	522	188
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(ft)	12				12			12				12
Link Offset(ft)	0				0			0				0
Crosswalk Width(ft)	16				16			16				16
Two way Left Turn Lane												
Headway Factor	1.14	1.01	1.01	1.14	1.14	1.14	1.16	1.16	1.16	1.14	1.14	1.01
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100		20	100	20
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94				94
Detector 2 Size(ft)		6			6			6				6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	

Lanes, Volumes, Timings  
14: Jefferson St & Reserve Ave

2020 Buildout (Single Ln) AM  
3/26/2015



Lane Group	EBL	EST	EBR	NBL	NBT	NBR	NBL	NBT	NBR	SLB	SLT	SPB
Permitted Phases	4			8		2			6			6
Detector Phase	4	4		8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		4.0	30.0		4.0	30.0	30.0
Minimum Split (s)	22.0	22.0		22.0	22.0		18.0	36.0		10.0	36.0	36.0
Total Split (s)	26.0	26.0		26.0	26.0		18.0	44.0		10.0	36.0	36.0
Total Split (%)	32.5%	32.5%		32.5%	32.5%		22.5%	55.0%		12.5%	45.0%	45.0%
Maximum Green (s)	20.0	20.0		20.0	20.0		12.0	38.0		4.0	30.0	30.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Lead/Lag							Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		0.2	6.0		0.2	6.0	6.0
Recall Mode	Max	Max		Max	Max		Max	C-Min		Max	C-Min	C-Min
Walk Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	5.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0			11.0			11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0			0			0	0
Act Effct Green (s)	20.0	20.0		20.0			48.0	38.0		34.0	30.0	30.0
Actuated g/C Ratio	0.25	0.25		0.25			0.60	0.48		0.42	0.38	0.38
v/c Ratio	0.90	0.20		0.36			0.12	0.69		0.22	0.44	0.26
Control Delay	66.5	12.7		9.7			4.3	17.2		9.8	20.1	3.2
Queue Delay	0.0	0.0		0.0			0.0	0.0		0.0	0.0	0.0
Total Delay	66.5	12.7		9.7			4.3	17.2		9.8	20.1	3.2
LOS	E	B		A			A	B		A	C	A
Approach Delay		51.8		9.7				15.9			15.1	
Approach LOS		D		A				B			B	

**Intersection Summary**

Area Type: CBD

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 8 (10%), Referenced to phase 2:NBL and 6:SBTL, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 21.3

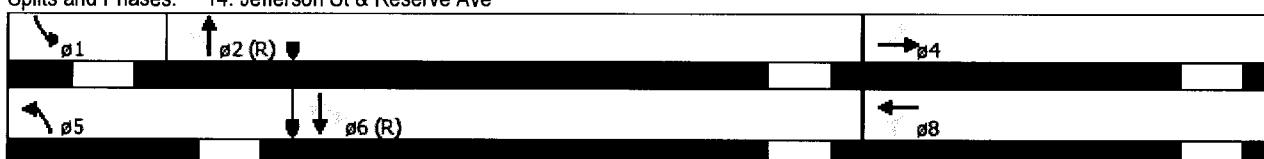
Intersection LOS: C

Intersection Capacity Utilization 77.5%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 14: Jefferson St & Reserve Ave



HCM 2010 Signalized Intersection Summary  
14: Jefferson St & Reserve Ave

2020 Buildout (Single Ln) AM  
3/26/2015

Movement	E BL	E BT	E BR	W BL	W BT	W BR	N BL	N BT	N BR	S BL	S BT	S BR
Lane Configurations	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑↑	↑
Volume (veh/h)	221	32	51	0	32	126	53	497	5	65	480	173
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1676	1744	1778	1676	1676	1710	1718	1718	1753	1676	1676	1744
Adj Flow Rate, veh/h	240	35	55	0	35	137	58	540	5	71	522	0
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	254	153	240	90	75	293	540	807	7	380	1194	556
Arrive On Green	0.25	0.25	0.25	0.00	0.25	0.25	0.20	0.63	0.63	0.05	0.38	0.00
Sat Flow, veh/h	1087	612	962	1171	299	1171	1637	1700	16	1597	3185	1482
Grp Volume(v), veh/h	240	0	90	0	0	172	58	0	545	71	522	0
Grp Sat Flow(s), veh/h/ln	1087	0	1574	1171	0	1470	1637	0	1716	1597	1593	1482
Q Serve(g_s), s	12.0	0.0	3.6	0.0	0.0	8.0	1.3	0.0	16.2	2.1	9.8	0.0
Cycle Q Clear(g_c), s	20.0	0.0	3.6	0.0	0.0	8.0	1.3	0.0	16.2	2.1	9.8	0.0
Prop In Lane	1.00		0.61	1.00		0.80	1.00		0.01	1.00		1.00
Lane Grp Cap(c), veh/h	254	0	393	90	0	367	540	0	815	380	1194	556
V/C Ratio(X)	0.95	0.00	0.23	0.00	0.00	0.47	0.11	0.00	0.67	0.19	0.44	0.00
Avail Cap(c_a), veh/h	254	0	393	90	0	367	540	0	815	380	1194	556
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	0.00	0.00	1.00	0.82	0.00	0.82	1.00	1.00	0.00
Uniform Delay (d), s/veh	35.9	0.0	23.9	0.0	0.0	25.5	8.8	0.0	10.7	14.3	18.7	0.0
Incr Delay (d2), s/veh	44.1	0.0	1.4	0.0	0.0	4.2	0.3	0.0	3.6	1.1	1.2	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	8.4	0.0	1.7	0.0	0.0	3.6	0.6	0.0	8.3	1.0	4.5	0.0
LnGrp Delay(d), s/veh	80.0	0.0	25.2	0.0	0.0	29.7	9.1	0.0	14.3	15.4	19.9	0.0
LnGrp LOS	E		C			C	A		B	B	B	
Approach Vol, veh/h		330			172				603			593
Approach Delay, s/veh		65.1			29.7				13.8			19.3
Approach LOS		E			C				B			B
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.0	44.0		26.0	18.0	36.0		26.0				
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s	4.0	38.0		20.0	12.0	30.0		20.0				
Max Q Clear Time (g_c+l1), s	4.1	18.2		22.0	3.3	11.8		10.0				
Green Ext Time (p_c), s	0.0	13.6		0.0	0.0	12.8		1.9				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			27.3									
HCM 2010 LOS			C									

Approach	EB	WB	NB	SB
Crosswalk Length (ft)	39.0	36.4	47.2	48.1
Crosswalk Width (ft)	12.0	12.0	12.0	12.0
Total Number of Lanes Crossed	3	3	4	4
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	6	2	4	8
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (mph)	30	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-	-
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-	-
Pedestrian Delay (s/p)	40.0	40.0	40.0	40.0
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.14	2.04	2.42	2.55
Pedestrian Crosswalk LOS	B	B	B	B

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Two Way Analysis cannot be performed on Signalized Intersection.

## Lanes, Volumes, Timings

2020 Buildout (Single Ln) PM

3: Jefferson/Jefferson St &amp; McClanahan St/Yellow Mountain Rd

3/26/2015



Lane Group	EGL	EBT	EBR	WBL	WBT	WBR	NBL	NET	NBR	SBL	SBT	SNB
Lane Configurations												
Volume (vph)	212	158	21	5	63	32	63	96	5	128	206	273
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	10	10	10	12	16	12	11	11	10
Grade (%)					-6%			-4%			4%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99			1.00	0.97		0.99			0.99	0.94
Frt		0.993				0.850		0.996				0.850
Flt Protected		0.974			0.997			0.981			0.981	
Satd. Flow (prot)	0	1641	0	0	1639	1397	0	1683	0	0	1579	1291
Flt Permitted		0.792			0.972			0.768			0.810	
Satd. Flow (perm)	0	1325	0	0	1597	1350	0	1307	0	0	1293	1214
Right Turn on Red			No			Yes			Yes		Yes	
Satd. Flow (RTOR)					41			2				297
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		368			600			400			394	
Travel Time (s)		8.4			13.6			9.1			9.0	
Confl. Peds. (#/hr)	9		7	7		9	25		19	19		25
Confl. Bikes (#/hr)								1				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	0%	0%	0%	0%	0%	2%	4%	0%	0%	1%	3%
Parking (#/hr)	0	0	0				0	0	0			
Adj. Flow (vph)	230	172	23	5	68	35	68	104	5	139	224	297
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	425	0	0	73	35	0	177	0	0	363	297
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(ft)	0				0			0			0	
Link Offset(ft)	0				0			0			0	
Crosswalk Width(ft)	16				16			16			16	
Two way Left Turn Lane												
Headway Factor	1.16	1.13	1.16	1.20	1.20	1.20	1.12	1.09	1.12	1.22	1.22	1.28
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		0.0

## Lanes, Volumes, Timings

2020 Buildout (Single Ln) PM

3: Jefferson/Jefferson St &amp; McClanahan St/Yellow Mountain Rd

3/26/2015



Lane Group	E BL	E BT	E BR	N WL	N BT	N BR	N BL	N BT	N BR	S BL	S BT	C BD
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4				8		8	2			6	
Detector Phase	4	4		8	8	8	2	2		6	6	6
Switch Phase												
Minimum Initial (s)	12.0	12.0		12.0	12.0	12.0	12.0	12.0		12.0	12.0	12.0
Minimum Split (s)	31.0	31.0		31.0	31.0	31.0	31.0	31.0		31.0	31.0	31.0
Total Split (s)	40.0	40.0		40.0	40.0	40.0	40.0	40.0		40.0	40.0	40.0
Total Split (%)	50.0%	50.0%		50.0%	50.0%	50.0%	50.0%	50.0%		50.0%	50.0%	50.0%
Maximum Green (s)	34.0	34.0		34.0	34.0	34.0	34.0	34.0		34.0	34.0	34.0
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0				0.0	0.0		0.0			0.0	0.0
Total Lost Time (s)		6.0			6.0	6.0		6.0			6.0	6.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5
Recall Mode	None	None		None	None	None	C-Min	C-Min		C-Min	C-Min	C-Min
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	18.0	18.0		18.0	18.0	18.0	18.0	18.0		18.0	18.0	18.0
Pedestrian Calls (#/hr)	16	16		16	16	16	44	44		44	44	44
Act Effct Green (s)	30.3			30.3	30.3		37.7			37.7	37.7	
Actuated g/C Ratio	0.38			0.38	0.38	0.38	0.47			0.47	0.47	
v/c Ratio	0.85			0.12	0.07		0.29			0.60	0.41	
Control Delay	39.1			15.1	4.5		15.7			16.2	2.3	
Queue Delay	0.0			0.0	0.0		0.0			0.0	0.0	
Total Delay	39.1			15.1	4.5		15.7			16.2	2.3	
LOS	D			B	A		B			B	A	
Approach Delay	39.1			11.7			15.7			9.9		
Approach LOS	D			B			B			A		

**Intersection Summary**

Area Type: CBD

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 55 (69%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 19.9

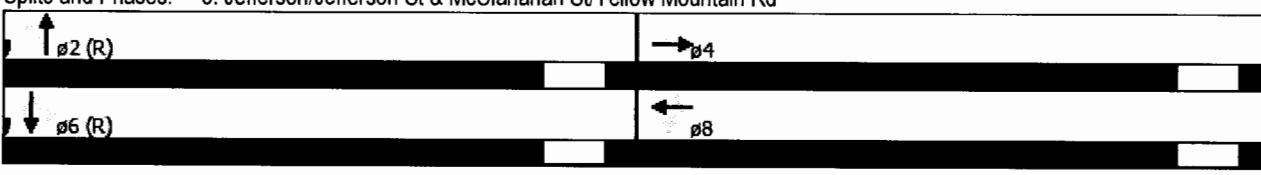
Intersection LOS: B

Intersection Capacity Utilization 87.1%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 3: Jefferson/Jefferson St &amp; McClanahan St/Yellow Mountain Rd



HCM 2010 Signalized Intersection Summary  
3: Jefferson/Jefferson St & McClanahan St/Yellow Mountain Rd

2020 Buildout (Single Ln) PM  
3/26/2015

Movement	EBL	EBT	EBC	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	→	↓	↑	←	↑	↓	↑	↔	↑	↓
Volume (veh/h)	212	158	21	5	63	32	63	96	5	128	206	273
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A <sub>pbT</sub> )	0.99		0.99	1.00		0.99	0.99		0.95	0.99		0.97
Parking Bus, Adj	1.00	1.00	0.90	1.00	1.00	1.00	1.00	1.00	0.90	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1693	1732	1693	1761	1761	1761	1744	1759	1744	1676	1666	1627
Adj Flow Rate, veh/h	230	172	23	5	68	35	68	104	5	139	224	297
Adj No. of Lanes	0	1	0	0	1	1	0	1	0	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0	4	4	4	1	1	3
Cap, veh/h	313	197	25	67	657	577	210	287	13	280	416	619
Arrive On Green	0.39	0.39	0.39	0.39	0.39	0.39	0.46	0.46	0.46	0.77	0.77	0.77
Sat Flow, veh/h	624	506	65	48	1685	1480	321	623	27	474	903	1345
Grp Volume(v), veh/h	425	0	0	73	0	35	177	0	0	363	0	297
Grp Sat Flow(s), veh/h/ln	1194	0	0	1733	0	1480	971	0	0	1377	0	1345
Q Serve(g_s), s	25.1	0.0	0.0	0.0	0.0	1.2	4.5	0.0	0.0	0.0	0.0	6.5
Cycle Q Clear(g_c), s	27.2	0.0	0.0	2.1	0.0	1.2	13.3	0.0	0.0	8.8	0.0	6.5
Prop In Lane	0.54		0.05	0.07		1.00	0.38		0.03	0.38		1.00
Lane Grp Cap(c), veh/h	535	0	0	724	0	577	509	0	0	696	0	619
V/C Ratio(X)	0.79	0.00	0.00	0.10	0.00	0.06	0.35	0.00	0.00	0.52	0.00	0.48
Avail Cap(c_a), veh/h	578	0	0	783	0	629	509	0	0	696	0	619
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.7	0.0	0.0	15.5	0.0	15.3	15.0	0.0	0.0	5.9	0.0	5.7
Incr Delay (d2), s/veh	8.0	0.0	0.0	0.1	0.0	0.1	1.9	0.0	0.0	2.8	0.0	2.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	10.0	0.0	0.0	1.0	0.0	0.5	3.0	0.0	0.0	3.6	0.0	2.8
LnGrp Delay(d), s/veh	31.6	0.0	0.0	15.6	0.0	15.3	16.8	0.0	0.0	8.7	0.0	8.4
LnGrp LOS	C		B		B	B			A		A	
Approach Vol, veh/h	425			108			177			660		
Approach Delay, s/veh	31.6			15.5			16.8			8.5		
Approach LOS	C		B		B		B			A		
Timers	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+R <sub>c</sub> ), s	42.8		37.2		42.8		37.2					
Change Period (Y+R <sub>c</sub> ), s	6.0		6.0		6.0		6.0					
Max Green Setting (Gmax), s	34.0		34.0		34.0		34.0					
Max Q Clear Time (g_c+1), s	15.3		29.2		10.8		4.1					
Green Ext Time (p_c), s	7.4		2.0		8.2		6.1					
Intersection Summary												
HCM 2010 Ctrl Delay			17.3									
HCM 2010 LOS			B									

Approach	EB	WB	NB	SB
Crosswalk Length (ft)	29.8	32.2	28.2	35.0
Crosswalk Width (ft)	12.0	12.0	12.0	12.0
Total Number of Lanes Crossed	2	3	2	3
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	6	2	4	8
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (mph)	30	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-	-
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-	-
Pedestrian Delay (s/p)	40.0	40.0	40.0	40.0
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.14	2.08	1.93	2.28
Pedestrian Crosswalk LOS	B	B	A	B

Two Way Analysis cannot be performed on Signalized Intersection.

Lanes, Volumes, Timings  
6: Jefferson St & Weller Ave/Flannagan Dr

2020 Buildout (Single Ln) PM

3/26/2015

Lane Group	EBL	EST	ESR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	→	↓	↙	↔	↖	↑	↗	↖	↑	↗	↖
Volume (vph)	47	67	117	41	9	47	39	336	26	61	457	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	13	14	11	11	12	12	16	12	12	12	12
Grade (%)			0%		-3%			-6%			-5%	
Storage Length (ft)	0		0	0		0	0		80	0		85
Storage Lanes	1		0	0		1	0		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor	0.99				1.00			1.00			1.00	0.99
Frt	0.905					0.850		0.991				0.850
Flt Protected	0.950				0.961			0.995			0.994	
Satd. Flow (prot)	1554	1534	0	0	1561	1341	0	1912	0	0	3253	1461
Flt Permitted	0.721				0.523			0.914			0.853	
Satd. Flow (perm)	1180	1534	0	0	848	1341	0	1757	0	0	2791	1441
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)	120					51			6			63
Link Speed (mph)	30				30			30			30	
Link Distance (ft)	138				151			350			1530	
Travel Time (s)	3.1				3.4			8.0			34.8	
Confl. Peds. (#/hr)		4	4				2		1	1		2
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	8%	0%	5%	4%	0%	10%	0%	3%	4%	0%	2%	2%
Adj. Flow (vph)	51	73	127	45	10	51	42	365	28	66	497	63
Shared Lane Traffic (%)												
Lane Group Flow (vph)	51	200	0	0	55	51	0	435	0	0	563	63
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(ft)	13				13			0			11	
Link Offset(ft)	0				0			0			0	
Crosswalk Width(ft)	16				16			16			16	
Two way Left Turn Lane												
Headway Factor	1.10	1.10	1.05	1.17	1.17	1.12	1.10	0.94	1.10	1.11	1.11	1.11
Turning Speed (mph)	15		9	15		9	15			15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	

Lanes, Volumes, Timings  
6: Jefferson St & Weller Ave/Flannagan Dr

2020 Buildout (Single Ln) PM

3/26/2015



Lane Group	EBL	ERT	EBR	WBL	WBR	NBL	NBR	PBL	PBR	SBL	SBR
<b>Detector 2 Channel</b>											
Detector 2 Extend (s)		0.0			0.0			0.0		0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA
Protected Phases		4			8			2			6
Permitted Phases	4			8	8	8	2			6	6
Detector Phase	4	4		8	8	8	2	2		6	6
Switch Phase											
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	12.0	12.0		12.0	12.0
Minimum Split (s)	31.0	31.0		22.0	22.0	22.0	22.0	22.0		34.0	34.0
Total Split (s)	34.0	34.0		34.0	34.0	34.0	46.0	46.0		46.0	46.0
Total Split (%)	42.5%	42.5%		42.5%	42.5%	42.5%	57.5%	57.5%		57.5%	57.5%
Maximum Green (s)	28.0	28.0		28.0	28.0	40.0	40.0			40.0	40.0
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0			4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0			2.0	2.0
Lost Time Adjust (s)	0.0	0.0			0.0	0.0				0.0	0.0
Total Lost Time (s)	6.0	6.0			6.0	6.0				6.0	6.0
Lead/Lag											
Lead-Lag Optimize?											
Vehicle Extension (s)	4.5	4.5		4.5	4.5	6.0	6.0			6.0	6.0
Recall Mode	None	None		None	None	C-Min	C-Min			C-Min	C-Min
Walk Time (s)	7.0	7.0								7.0	7.0
Flash Dont Walk (s)	18.0	18.0								21.0	21.0
Pedestrian Calls (#/hr)	4	4								3	3
Act Effct Green (s)	13.2	13.2		13.2	13.2		54.8			54.8	54.8
Actuated g/C Ratio	0.16	0.16		0.16	0.16		0.68			0.68	0.68
v/c Ratio	0.26	0.57		0.39	0.19		0.36			0.29	0.06
Control Delay	29.5	18.2		35.3	8.8		5.4			2.1	0.2
Queue Delay	0.0	0.0		0.0	0.0		0.0			0.0	0.0
Total Delay	29.5	18.2		35.3	8.8		5.4			2.1	0.2
LOS	C	B		D	A		A			A	A
Approach Delay		20.5			22.6		5.4			1.9	
Approach LOS		C			C		A			A	

**Intersection Summary**

Area Type: CBD

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 54 (68%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.57

Intersection Signal Delay: 7.8

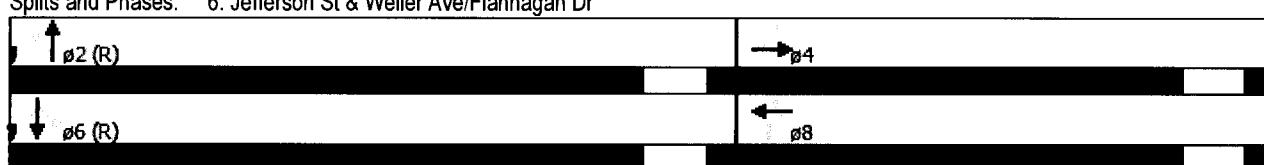
Intersection LOS: A

Intersection Capacity Utilization 85.4%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 6: Jefferson St & Weller Ave/Flannagan Dr



HCM 2010 Signalized Intersection Summary  
6: Jefferson St & Weller Ave/Flannagan Dr

2020 Buildout (Single Ln) PM  
3/26/2015

Movement	EBL	EBT	EBC	WBL	WBT	WBC	NBL	NBT	NBC	SBL	SBT	SBC
Lane Configurations	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑
Volume (veh/h)	47	67	117	41	9	47	39	336	26	61	457	58
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		1.00	1.00		0.99	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1647	1724	1778	1736	1681	1578	1761	1782	1761	1753	1722	1718
Adj Flow Rate, veh/h	51	73	127	45	10	51	42	365	28	66	497	63
Adj No. of Lanes	1	1	0	0	1	1	0	1	0	0	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	8	0	0	0	0	10	3	3	3	2	2	2
Cap, veh/h	207	139	242	207	37	328	109	868	64	228	1611	880
Arrive On Green	0.25	0.25	0.25	0.25	0.25	0.25	1.00	1.00	1.00	0.20	0.20	0.20
Sat Flow, veh/h	1175	564	981	508	151	1330	98	1438	106	286	2670	1459
Grp Volume(v), veh/h	51	0	200	55	0	51	435	0	0	284	279	63
Grp Sat Flow(s), veh/h/ln	1175	0	1545	658	0	1330	1643	0	0	1468	1489	1459
Q Serve(g_s), s	3.3	0.0	9.0	2.8	0.0	2.4	0.0	0.0	0.0	5.6	12.8	2.8
Cycle Q Clear(g_c), s	15.0	0.0	9.0	11.8	0.0	2.4	0.0	0.0	0.0	12.2	12.8	2.8
Prop In Lane	1.00		0.63	0.82		1.00	0.10		0.06	0.23		1.00
Lane Grp Cap(c), veh/h	207	0	381	244	0	328	1040	0	0	941	898	880
V/C Ratio(X)	0.25	0.00	0.52	0.23	0.00	0.16	0.42	0.00	0.00	0.30	0.31	0.07
Avail Cap(c_a), veh/h	329	0	541	362	0	466	1040	0	0	941	898	880
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	0.33	0.33	0.33
Upstream Filter(l)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	0.88	0.88	0.88
Uniform Delay (d), s/veh	33.9	0.0	26.1	29.4	0.0	23.6	0.0	0.0	0.0	17.3	17.8	13.8
Incr Delay (d2), s/veh	1.0	0.0	1.9	0.8	0.0	0.4	1.2	0.0	0.0	0.7	0.8	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	1.1	0.0	4.0	1.1	0.0	0.9	0.4	0.0	0.0	5.5	5.5	1.2
LnGrp Delay(d), s/veh	34.9	0.0	28.0	30.2	0.0	24.0	1.2	0.0	0.0	18.1	18.6	14.0
LnGrp LOS	C	C	C	C	A				B	B	B	
Approach Vol, veh/h		251			106			435			626	
Approach Delay, s/veh		29.4			27.2			1.2			17.9	
Approach LOS		C			C			A			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		54.3		25.7		54.3		25.7				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		40.0		28.0		40.0		28.0				
Max Q Clear Time (g_c+l1), s		2.0		17.0		14.8		13.8				
Green Ext Time (p_c), s		20.4		2.2		15.8		2.6				
Intersection Summary												
HCM 2010 Ctrl Delay			15.5									
HCM 2010 LOS			B									

Approach	EB	WB	NB	SB
Crosswalk Length (ft)	58.0	45.3	40.0	58.4
Crosswalk Width (ft)	12.0	12.0	12.0	12.0
Total Number of Lanes Crossed	4	3	3	4
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	6	2	4	8
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (mph)	30	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-	-
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-	-
Pedestrian Delay (s/p)	40.0	40.0	40.0	40.0
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.23	2.03	2.30	2.40
Pedestrian Crosswalk LOS	B	B	B	B

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Two Way Analysis cannot be performed on Signalized Intersection.

Lanes, Volumes, Timings  
7: Evans Mill Rd & Weller Ave

2020 Buildout (Single Ln) PM  
3/26/2015



Lane Group	WBL	WBR	NBT	NRT	SLT	STT
Lane Configurations	1	1	1↑	1	1	1↑
Volume (vph)	72	35	152	97	135	383
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	14	15	10	10	10	10
Lane Util. Factor	1.00	1.00	0.95	0.95	0.95	0.95
Ped Bike Factor						
Fr1		0.850	0.942			
Flt Protected	0.950					0.987
Satd. Flow (prot)	1699	1599	2760	0	0	2977
Flt Permitted	0.950					0.987
Satd. Flow (perm)	1699	1599	2760	0	0	2977
Link Speed (mph)	30		30			30
Link Distance (ft)	138		244			240
Travel Time (s)	3.1		5.5			5.5
Confl. Peds. (#/hr)				2	2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	0%	9%	2%	0%
Adj. Flow (vph)	78	38	165	105	147	416
Shared Lane Traffic (%)						
Lane Group Flow (vph)	78	38	270	0	0	563
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	14		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.05	1.01	1.25	1.25	1.25	1.25
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

**Intersection Summary**

Area Type: CBD

Control Type: Unsignalized

Intersection Capacity Utilization 39.1%

ICU Level of Service A

Analysis Period (min) 15

**Intersection**

Int Delay, s/veh 3.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	72	35	152	97	135	383
Conflicting Peds, #/hr	0	0	0	2	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	0	0	9	2	0
Mvmt Flow	78	38	165	105	147	416

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	720	137	0 0 271 0
Stage 1	218	-	- - - -
Stage 2	502	-	- - - -
Critical Hdwy	6.84	6.9	- - 4.14 -
Critical Hdwy Stg 1	5.84	-	- - - -
Critical Hdwy Stg 2	5.84	-	- - - -
Follow-up Hdwy	3.52	3.3	- - 2.22 -
Pot Cap-1 Maneuver	363	893	- - 1289 -
Stage 1	797	-	- - - -
Stage 2	573	-	- - - -
Platoon blocked, %		- -	- -
Mov Cap-1 Maneuver	308	892	- - 1287 -
Mov Cap-2 Maneuver	308	-	- - - -
Stage 1	797	-	- - - -
Stage 2	487	-	- - - -

Approach	WB	NB	SB
HCM Control Delay, s	16.9	0	2.4
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBL n1	WBL n2	SBL	SBT
Capacity (veh/h)	-	-	308	892	1287	-
HCM Lane V/C Ratio	-	-	0.254	0.043	0.114	-
HCM Control Delay (s)	-	-	20.6	9.2	8.2	0.4
HCM Lane LOS	-	-	C	A	A	A
HCM 95th %tile Q(veh)	-	-	1	0.1	0.4	-

Lanes, Volumes, Timings  
11: Jefferson St & Site Entr

2020 Buildout (Single Ln) PM  
3/26/2015



Lane Group	WLT	WRT	NBT	NBP	SLT	SRT
Lane Configurations	Y		↑		↙	↗
Volume (vph)	192	128	274	66	201	415
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%		-6%			4%
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95
Ped Bike Factor						
Frt	0.946		0.974			
Flt Protected	0.971					0.984
Satd. Flow (prot)	1540	0	1682	0	0	3072
Flt Permitted	0.971					0.984
Satd. Flow (perm)	1540	0	1682	0	0	3072
Link Speed (mph)	30		30			30
Link Distance (ft)	342		394			350
Travel Time (s)	7.8		9.0			8.0
Confl. Peds. (#/hr)	50			20	20	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	209	139	298	72	218	451
Shared Lane Traffic (%)						
Lane Group Flow (vph)	348	0	370	0	0	669
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		15			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.14	1.14	1.10	1.10	1.17	1.17
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

**Intersection Summary**

Area Type: CBD  
Control Type: Unsignalized  
Intersection Capacity Utilization 70.6%  
Analysis Period (min) 15

ICU Level of Service C

Intersection

Int Delay, s/veh 71.6

Movement	WBL	WR	NBT	NBR	SBL	SBT
Vol, veh/h	192	128		274 66	201	415
Conflicting Peds, #/hr	50	0		0 20	20	0
Sign Control	Stop	Stop		Free Free	Free	Free
RT Channelized	-	None		- None	-	None
Storage Length	0	-		- -	-	-
Veh in Median Storage, #	0	-		0 -	-	0
Grade, %	0	-		-6 -	-	4
Peak Hour Factor	92	92		92 92	92	92
Heavy Vehicles, %	2	2		2 2	2	2
Mvmt Flow	209	139		298 72	218	451

Major/Minor	Minor 1		Major 1		Major 2	
Conflicting Flow All	1047	404		0 0	420	0
Stage 1	384	-		- -	-	-
Stage 2	663	-		- -	-	-
Critical Hdwy	6.63	6.23		- -	4.12	-
Critical Hdwy Stg 1	5.43	-		- -	-	-
Critical Hdwy Stg 2	5.83	-		- -	-	-
Follow-up Hdwy	3.519	3.319		- -	2.218	-
Pot Cap-1 Maneuver	238	646		- -	1139	-
Stage 1	688	-		- -	-	-
Stage 2	475	-		- -	-	-
Platoon blocked, %				- -	-	-
Mov Cap-1 Maneuver	~ 166	609		- -	1120	-
Mov Cap-2 Maneuver	~ 166	-		- -	-	-
Stage 1	659	-		- -	-	-
Stage 2	346	-		- -	-	-

Approach	WB		NB		SB	
HCM Control Delay, s	279.1		0		3.3	
HCM LOS	F					

Minor Lane/Major Mvmt	NBT	NBR	WBL	ln1	SBL	SBT
Capacity (veh/h)	-	-	234	1120	-	-
HCM Lane V/C Ratio	-	-	1.486	0.195	-	-
HCM Control Delay (s)	-	-	279.1	9	0.6	-
HCM Lane LOS	-	-	F	A	A	-
HCM 95th %tile Q(veh)	-	-	20.6	0.7	-	-

Notes

~: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon

Lanes, Volumes, Timings  
14: Jefferson St & Reserve Ave

2020 Buildout (Single Ln) PM  
3/26/2015

	ESL	EST	EBR	WEL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	194	26	53	5	37	184	11	382	5	34	517	284
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	15	15	12	12	12	11	11	11	12	12	15
Grade (%)		0%			0%			-5%			0%	
Storage Length (ft)	0		0	100		0	100		0	220		80
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	25			100			150			180		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00
Frt		0.899			0.875			0.998				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1593	1658	0	1593	1467	0	1578	1658	0	1593	3185	1568
Flt Permitted	0.511			0.701			0.321			0.517		
Satd. Flow (perm)	857	1658	0	1175	1467	0	533	1658	0	867	3185	1568
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)	58				200			1				309
Link Speed (mph)	30				30			30			30	
Link Distance (ft)	551				718			1530			504	
Travel Time (s)	12.5				16.3			34.8			11.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	211	28	58	5	40	200	12	415	5	37	562	309
Shared Lane Traffic (%)												
Lane Group Flow (vph)	211	86	0	5	240	0	12	420	0	37	562	309
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(ft)	12				12			12			12	
Link Offset(ft)	0				0			0			0	
Crosswalk Width(ft)	16				16			16			16	
Two way Left Turn Lane												
Headway Factor	1.14	1.01	1.01	1.14	1.14	1.14	1.16	1.16	1.16	1.14	1.14	1.01
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100		20	100	20
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)	94			94			94			94		
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	

Lanes, Volumes, Timings  
14: Jefferson St & Reserve Ave

2020 Buildout (Single Ln) PM  
3/26/2015

Phase Group	EGL	EBT	EGR	WL	WBT	WGR	NBL	NET	NBR	SGL	SBT	SBR
Permitted Phases	4			8			2			6		6
Detector Phase	4	4		8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		4.0	30.0		4.0	30.0	30.0
Minimum Split (s)	22.0	22.0		22.0	22.0		18.0	36.0		10.0	36.0	36.0
Total Split (s)	26.0	26.0		26.0	26.0		18.0	44.0		10.0	36.0	36.0
Total Split (%)	32.5%	32.5%		32.5%	32.5%		22.5%	55.0%		12.5%	45.0%	45.0%
Maximum Green (s)	20.0	20.0		20.0	20.0		12.0	38.0		4.0	30.0	30.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Lead/Lag							Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		0.2	6.0		0.2	6.0	6.0
Recall Mode	Max	Max		Max	Max		Max	C-Min		Max	C-Min	C-Min
Walk Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	5.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0			11.0			11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0			0			0	0
Act Effct Green (s)	20.0	20.0		20.0	20.0		48.0	38.0		34.0	30.0	30.0
Actuated g/C Ratio	0.25	0.25		0.25	0.25		0.60	0.48		0.42	0.38	0.38
v/c Ratio	0.99	0.19		0.02	0.47		0.03	0.53		0.09	0.47	0.40
Control Delay	92.0	11.8		23.0	9.4		5.1	17.6		8.4	20.6	3.9
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	92.0	11.8		23.0	9.4		5.1	17.6		8.4	20.6	3.9
LOS	F	B		C	A		A	B		A	C	A
Approach Delay		68.8			9.7			17.2			14.4	
Approach LOS		E			A			B			B	

Intersection Summary

Area Type: CBD

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 8 (10%), Referenced to phase 2:NBL and 6:SBTL, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.99

Intersection Signal Delay: 23.0

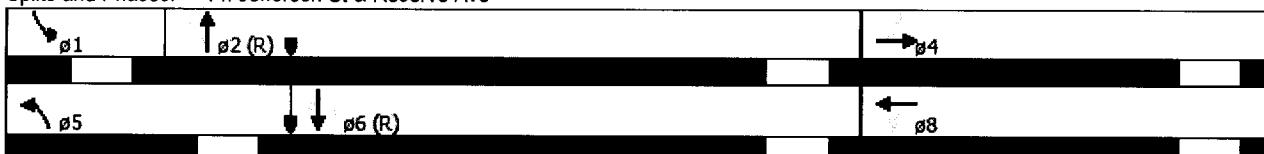
Intersection LOS: C

Intersection Capacity Utilization 73.1%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 14: Jefferson St & Reserve Ave



HCM 2010 Signalized Intersection Summary  
14: Jefferson St & Reserve Ave

2020 Buildout (Single Ln) PM  
3/26/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SL	SBT	SBR
Lane Configurations	↑	↑		↑	↑		↑	↑		↑	↑↑	↑
Volume (veh/h)	194	26	53	5	37	184	11	382	5	34	517	284
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1676	1744	1778	1676	1676	1710	1718	1718	1753	1676	1676	1744
Adj Flow Rate, veh/h	211	28	58	5	40	200	12	415	5	37	562	0
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	195	127	263	332	61	304	523	805	10	495	1194	556
Arrive On Green	0.25	0.25	0.25	0.25	0.25	0.25	0.30	0.95	0.95	0.05	0.38	0.00
Sat Flow, veh/h	1022	507	1051	1175	244	1218	1637	1694	20	1597	3185	1482
Grp Volume(v), veh/h	211	0	86	5	0	240	12	0	420	37	562	0
Grp Sat Flow(s),veh/h/ln	1022	0	1558	1175	0	1462	1637	0	1715	1597	1593	1482
Q Serve(g_s), s	8.2	0.0	3.5	0.3	0.0	11.8	0.2	0.0	1.9	1.1	10.7	0.0
Cycle Q Clear(g_c), s	20.0	0.0	3.5	3.8	0.0	11.8	0.2	0.0	1.9	1.1	10.7	0.0
Prop In Lane	1.00		0.67	1.00		0.83	1.00		0.01	1.00		1.00
Lane Grp Cap(c), veh/h	195	0	390	332	0	365	523	0	815	495	1194	556
V/C Ratio(X)	1.08	0.00	0.22	0.02	0.00	0.66	0.02	0.00	0.52	0.07	0.47	0.00
Avail Cap(c_a), veh/h	195	0	390	332	0	365	523	0	815	495	1194	556
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	0.00	1.00	0.95	0.00	0.95	1.00	1.00	0.00
Uniform Delay (d), s/veh	37.8	0.0	23.8	25.3	0.0	26.9	7.6	0.0	1.1	13.5	19.0	0.0
Incr Delay (d2), s/veh	88.2	0.0	1.3	0.1	0.0	8.9	0.1	0.0	2.2	0.3	1.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.1	0.0	1.6	0.1	0.0	5.6	0.1	0.0	1.0	0.5	4.9	0.0
LnGrp Delay(d),s/veh	126.0	0.0	25.1	25.4	0.0	35.8	7.6	0.0	3.3	13.8	20.3	0.0
LnGrp LOS	F	C	C		D	A		A	B	C		
Approach Vol, veh/h		297			245			432			599	
Approach Delay, s/veh		96.8			35.6			3.4			19.9	
Approach LOS		F			D			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.0	44.0		26.0	18.0	36.0		26.0
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0
Max Green Setting (Gmax), s	4.0	38.0		20.0	12.0	30.0		20.0
Max Q Clear Time (g_c+11), s	3.1	3.9		22.0	2.2	12.7		13.8
Green Ext Time (p_c), s	0.0	18.1		0.0	0.0	11.4		1.6

**Intersection Summary**

HCM 2010 Ctrl Delay                            32.3  
HCM 2010 LOS                                    C

Approach	EB	WB	NB	SB
Crosswalk Length (ft)	39.0	36.4	47.2	48.1
Crosswalk Width (ft)	12.0	12.0	12.0	12.0
Total Number of Lanes Crossed	3	3	4	4
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	6	2	4	8
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (mph)	30	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-	-
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-	-
Pedestrian Delay (s/p)	40.0	40.0	40.0	40.0
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.16	2.05	2.39	2.56
Pedestrian Crosswalk LOS	B	B	B	B

Two Way Analysis cannot be performed on Signalized Intersection.

## Lanes, Volumes, Timings

2020 Buildout (Dbl Ln) AM

3: Jefferson/Jefferson St &amp; McClanahan St/Yellow Mountain Rd

3/26/2015

Lane Group	E BL	E BT	E BR	W BL	W BT	W BR	N BL	N BT	N BR	S BL	S BT	S BR
Lane Configurations												
Volume (vph)	254	21	32	5	147	115	26	259	5	38	85	128
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	10	10	10	12	16	12	11	11	10
Grade (%)		2%			-6%			-4%			4%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99			1.00	0.97		0.99			1.00	0.91
Fr <sub>t</sub>		0.986				0.850		0.998				0.850
Flt Protected		0.960			0.998			0.996			0.985	
Satd. Flow (prot)	0	1579	0	0	1609	1397	0	1727	0	0	1526	1278
Flt Permitted		0.655			0.989			0.969			0.842	
Satd. Flow (perm)	0	1070	0	0	1594	1356	0	1671	0	0	1299	1163
Right Turn on Red			No			Yes			Yes			Yes
Satd. Flow (RTOR)						125		1				139
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		368			600			400			394	
Travel Time (s)		8.4			13.6			9.1			9.0	
Confl. Peds. (#/hr)	6		13	13		6	45		16	16		45
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	0%	6%	0%	2%	0%	6%	2%	0%	8%	3%	4%
Parking (#/hr)	0	0	0				0	0	0			
Adj. Flow (vph)	276	23	35	5	160	125	28	282	5	41	92	139
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	334	0	0	165	125	0	315	0	0	133	139
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(ft)	0			0			0			0		0
Link Offset(ft)	0			0			0			0		0
Crosswalk Width(ft)	16			16			16			16		16
Two way Left Turn Lane												
Headway Factor	1.16	1.13	1.16	1.20	1.20	1.20	1.12	1.09	1.12	1.22	1.22	1.28
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm

## Lanes, Volumes, Timings

2020 Buildout (Dbl Ln) AM

3: Jefferson/Jefferson St &amp; McClanahan St/Yellow Mountain Rd

3/26/2015

Lane Group	EBL	EBT	EBC	WBL	WBT	WBC	NBL	NBT	NBC	SBL	SBT	SBC
Protected Phases		4			8			2			6	
Permitted Phases	4				8		8	2			6	
Detector Phase	4	4			8	8	8	2	2		6	6
Switch Phase												
Minimum Initial (s)	12.0	12.0		12.0	12.0	12.0	12.0	12.0		12.0	12.0	12.0
Minimum Split (s)	31.0	31.0		31.0	31.0	31.0	31.0	31.0		31.0	31.0	31.0
Total Split (s)	47.0	47.0		47.0	47.0	47.0	33.0	33.0		33.0	33.0	33.0
Total Split (%)	58.8%	58.8%		58.8%	58.8%	58.8%	41.3%	41.3%		41.3%	41.3%	41.3%
Maximum Green (s)	41.0	41.0		41.0	41.0	41.0	27.0	27.0		27.0	27.0	27.0
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0				0.0	0.0		0.0			0.0	0.0
Total Lost Time (s)		6.0			6.0	6.0		6.0			6.0	6.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5
Recall Mode	None	None		None	None	None	C-Min	C-Min		C-Min	C-Min	C-Min
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	18.0	18.0		18.0	18.0	18.0	18.0	18.0		18.0	18.0	18.0
Pedestrian Calls (#/hr)	19	19		19	19	19	61	61		61	61	61
Act Effct Green (s)		31.9			31.9	31.9		36.1			36.1	36.1
Actuated g/C Ratio		0.40			0.40	0.40		0.45			0.45	0.45
v/c Ratio		0.78			0.26	0.20		0.42			0.23	0.23
Control Delay		33.5			15.5	3.1		19.3			11.9	1.8
Queue Delay		0.0			0.0	0.0		0.0			0.0	0.0
Total Delay		33.5			15.5	3.1		19.3			11.9	1.8
LOS		C			B	A		B			B	A
Approach Delay		33.5			10.1			19.3			6.7	
Approach LOS		C			B			B			A	

## Intersection Summary

Area Type: CBD

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 57 (71%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 18.2

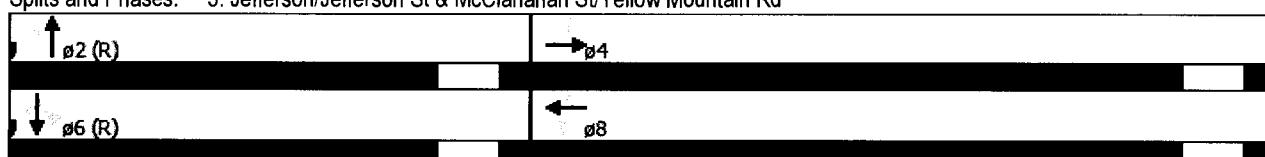
Intersection LOS: B

Intersection Capacity Utilization 70.5%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 3: Jefferson/Jefferson St &amp; McClanahan St/Yellow Mountain Rd



HCM 2010 Signalized Intersection Summary  
3: Jefferson/Jefferson St & McClanahan St/Yellow Mountain Rd

2020 Buildout (Dbl Ln) AM

3/26/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SEB
Lane Configurations		↔		↑	↑	↑	↔	↔		↑	↑	↑
Volume (veh/h)	254	21	32	5	147	115	26	259	5	38	85	128
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	1.00		0.99	0.96		0.94	0.98		0.94
Parking Bus, Adj	1.00	1.00	0.90	1.00	1.00	1.00	1.00	1.00	0.90	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1693	1708	1693	1761	1728	1761	1744	1773	1744	1676	1603	1611
Adj Flow Rate, veh/h	276	23	35	5	160	125	28	282	5	41	92	139
Adj No. of Lanes	0	1	0	0	1	1	0	1	0	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	2	2	0	2	2	2	3	3	4
Cap, veh/h	388	33	40	52	767	661	78	581	10	196	396	520
Arrive On Green	0.45	0.45	0.45	0.45	0.45	0.45	0.40	0.40	0.40	0.67	0.67	0.67
Sat Flow, veh/h	683	73	88	13	1712	1475	71	1445	24	340	986	1293
Grp Volume(v), veh/h	334	0	0	165	0	125	315	0	0	133	0	139
Grp Sat Flow(s), veh/h/ln	844	0	0	1724	0	1475	1540	0	0	1326	0	1293
Q Serve(g_s), s	25.5	0.0	0.0	0.0	0.0	4.1	0.0	0.0	0.0	0.0	0.0	3.4
Cycle Q Clear(g_c), s	30.1	0.0	0.0	4.7	0.0	4.1	11.8	0.0	0.0	2.5	0.0	3.4
Prop In Lane	0.83		0.10	0.03		1.00	0.09		0.02	0.31		1.00
Lane Grp Cap(c), veh/h	460	0	0	819	0	661	668	0	0	592	0	520
V/C Ratio(X)	0.73	0.00	0.00	0.20	0.00	0.19	0.47	0.00	0.00	0.22	0.00	0.27
Avail Cap(c_a), veh/h	521	0	0	929	0	756	668	0	0	592	0	520
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	22.3	0.0	0.0	13.5	0.0	13.3	17.8	0.0	0.0	8.3	0.0	8.4
Incr Delay (d2), s/veh	5.4	0.0	0.0	0.2	0.0	0.2	2.4	0.0	0.0	0.9	0.0	1.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	7.5	0.0	0.0	2.2	0.0	1.7	5.6	0.0	0.0	1.2	0.0	1.4
LnGrp Delay(d), s/veh	27.7	0.0	0.0	13.7	0.0	13.6	20.2	0.0	0.0	9.2	0.0	9.7
LnGrp LOS	C		B		B	C			A		A	
Approach Vol, veh/h	334			290				315		272		
Approach Delay, s/veh	27.7			13.6				20.2		9.4		
Approach LOS	C		B		B			C		A		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	38.2		41.8		38.2		41.8					
Change Period (Y+Rc), s	6.0		6.0		6.0		6.0					
Max Green Setting (Gmax), s	27.0		41.0		27.0		41.0					
Max Q Clear Time (g_c+l1), s	13.8		32.1		5.4		6.7					
Green Ext Time (p_c), s	4.3		3.7		5.5		7.4					
Intersection Summary												
HCM 2010 Ctrl Delay			18.3									
HCM 2010 LOS			B									

Approach	EB	NB	NB	SB
Crosswalk Length (ft)	29.8	32.2	28.2	35.0
Crosswalk Width (ft)	12.0	12.0	12.0	12.0
Total Number of Lanes Crossed	2	3	2	3
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	6	2	4	8
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (mph)	30	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-	-
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-	-
Pedestrian Delay (s/p)	40.0	40.0	40.0	40.0
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.04	2.06	1.94	2.26
Pedestrian Crosswalk LOS	B	B	A	B

Two Way Analysis cannot be performed on Signalized Intersection.

Lanes, Volumes, Timings  
6: Jefferson St & Weller Ave/Flannagan Dr

2020 Buildout (Dbl Ln) AM

3/26/2015

Lane Group	FBL	FRT	FPR	WBL	WPT	WPR	NBL	NPT	NBR	SBL	SBT	SBP
Lane Configurations												
Volume (vph)	32	82	65	26	11	41	54	530	42	124	344	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	14	14	11	11	12	12	16	12	12	12	12
Grade (%)		0%			-3%			-6%			-5%	
Storage Length (ft)	0		0	0		0	0		80	0		85
Storage Lanes	1		0	0		1	0		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor	0.99			0.99				1.00			1.00	
Fr <sub>t</sub>	0.933					0.850		0.991				0.850
Flt Protected	0.950				0.966			0.996				0.987
Satd. Flow (prot)	1472	1536	0	0	1560	1475	0	1918	0	0	3177	1433
Flt Permitted	0.731				0.740			0.919			0.662	
Satd. Flow (perm)	1133	1536	0	0	1184	1475	0	1770	0	0	2130	1433
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)	52				45			7				68
Link Speed (mph)	30				30			30				30
Link Distance (ft)	138				151			350				1530
Travel Time (s)	3.1				3.4			8.0				34.8
Confl. Peds. (#/hr)		17	17						3	3		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	14%	9%	10%	0%	13%	0%	20%	1%	0%	2%	4%	4%
Adj. Flow (vph)	35	89	71	28	12	45	59	576	46	135	374	68
Shared Lane Traffic (%)												
Lane Group Flow (vph)	35	160	0	0	40	45	0	681	0	0	509	68
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(ft)	13				13			0				11
Link Offset(ft)	0				0			0				0
Crosswalk Width(ft)	16				16			16				16
Two way Left Turn Lane												
Headway Factor	1.10	1.05	1.05	1.17	1.17	1.12	1.10	0.94	1.10	1.11	1.11	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

## Lanes, Volumes, Timings

2020 Buildout (Dbl Ln) AM

6: Jefferson St &amp; Weller Ave/Flannagan Dr

3/26/2015



Lane Group	EBI	FRT	PRR	WBL	WBT	WBW	NBL	NBT	NBW	SBL	SBT	SBW
Detector 2 Extend (s)		0.0			0.0			0.0		0.0	0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8	8	8	2			6		6
Detector Phase	4	4		8	8	8	2	2		6	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	12.0	12.0		12.0	12.0	12.0
Minimum Split (s)	31.0	31.0		22.0	22.0	22.0	22.0	22.0		34.0	34.0	34.0
Total Split (s)	31.0	31.0		31.0	31.0	31.0	49.0	49.0		49.0	49.0	49.0
Total Split (%)	38.8%	38.8%		38.8%	38.8%	38.8%	61.3%	61.3%		61.3%	61.3%	61.3%
Maximum Green (s)	25.0	25.0		25.0	25.0	25.0	43.0	43.0		43.0	43.0	43.0
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	4.5	4.5		4.5	4.5	4.5	6.0	6.0		6.0	6.0	6.0
Recall Mode	None	None		None	None	None	C-Min	C-Min		C-Min	C-Min	C-Min
Walk Time (s)	7.0	7.0								7.0	7.0	7.0
Flash Dont Walk (s)	18.0	18.0								21.0	21.0	21.0
Pedestrian Calls (#/hr)	17	17								3	3	3
Act Effct Green (s)	15.9	15.9		15.9	15.9	15.9	52.1			52.1	52.1	52.1
Actuated g/C Ratio	0.20	0.20		0.20	0.20	0.20	0.65			0.65	0.65	0.65
v/c Ratio	0.15	0.46		0.17	0.14	0.14	0.59			0.37	0.07	
Control Delay	24.1	21.0		24.5	7.6	7.6	10.7			3.3	0.2	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0			0.0	0.0	
Total Delay	24.1	21.0		24.5	7.6	7.6	10.7			3.3	0.2	
LOS	C	C		C	A	A	B			A	A	
Approach Delay		21.6			15.5		10.7			3.0		
Approach LOS		C		B		B				A		

## Intersection Summary

Area Type: CBD

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 44 (55%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.59

Intersection Signal Delay: 9.4

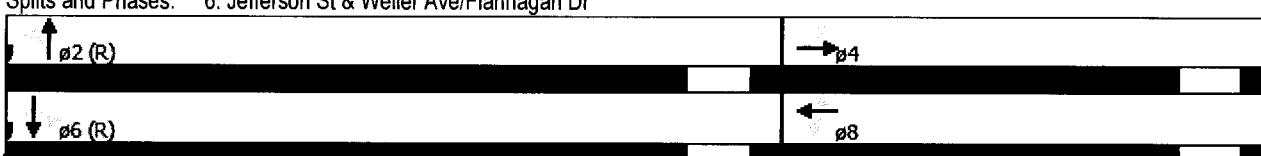
Intersection LOS: A

Intersection Capacity Utilization 91.4%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 6: Jefferson St &amp; Weller Ave/Flannagan Dr



Baseline

thl/msa

Synchro 8 Report

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HCM 2010 Signalized Intersection Summary  
6: Jefferson St & Weller Ave/Flannagan Dr

2020 Buildout (Dbl Ln) AM  
3/26/2015

Movement	EBl	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↓	→	←	↙	↖	↔	↕	↗	↘	↑	↓
Volume (veh/h)	32	82	65	26	11	41	54	530	42	124	344	63
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.97		0.98	0.99		0.96	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1560	1625	1778	1736	1671	1736	1761	1786	1761	1753	1694	1685
Adj Flow Rate, veh/h	35	89	71	28	12	45	59	576	46	135	374	68
Adj No. of Lanes	1	1	0	0	1	1	0	1	0	0	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	14	9	9	13	13	0	1	1	1	4	4	4
Cap, veh/h	218	186	149	188	66	319	109	915	71	424	1155	894
Arrive On Green	0.22	0.22	0.22	0.22	0.22	0.22	1.00	1.00	1.00	0.63	0.63	0.63
Sat Flow, veh/h	1093	829	661	495	292	1420	96	1463	113	561	1848	1430
Grp Volume(v), veh/h	35	0	160	40	0	45	681	0	0	217	292	68
Grp Sat Flow(s),veh/h/ln	1093	0	1490	787	0	1420	1672	0	0	945	1464	1430
Q Serve(g_s), s	2.3	0.0	7.5	1.2	0.0	2.0	0.0	0.0	0.0	6.7	7.5	1.5
Cycle Q Clear(g_c), s	10.9	0.0	7.5	8.6	0.0	2.0	0.0	0.0	0.0	7.9	7.5	1.5
Prop In Lane	1.00		0.44	0.70		1.00	0.09		0.07	0.62		1.00
Lane Grp Cap(c), veh/h	218	0	335	253	0	319	1094	0	0	664	915	894
V/C Ratio(X)	0.16	0.00	0.48	0.16	0.00	0.14	0.62	0.00	0.00	0.33	0.32	0.08
Avail Cap(c_a), veh/h	314	0	466	359	0	444	1094	0	0	664	915	894
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	0.89	0.89	0.89
Uniform Delay (d), s/veh	32.2	0.0	26.9	27.3	0.0	24.8	0.0	0.0	0.0	6.9	7.0	5.9
Incr Delay (d2), s/veh	0.6	0.0	1.8	0.5	0.0	0.3	2.7	0.0	0.0	1.2	0.8	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	3.2	0.8	0.0	0.8	0.8	0.0	0.0	2.4	3.2	0.6
LnGrp Delay(d),s/veh	32.8	0.0	28.7	27.7	0.0	25.2	2.7	0.0	0.0	8.1	7.8	6.1
LnGrp LOS	C	C	C	C	A	C	A	A	A	A	A	A
Approach Vol, veh/h		195			85			681			577	
Approach Delay, s/veh		29.5			26.4			2.7			7.7	
Approach LOS		C			C			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	56.0		24.0		56.0		24.0					
Change Period (Y+Rc), s	6.0		6.0		6.0		6.0					
Max Green Setting (Gmax), s	43.0		25.0		43.0		25.0					
Max Q Clear Time (g_c+1), s	2.0		12.9		9.9		10.6					
Green Ext Time (p_c), s	27.2		1.8		23.4		2.0					
Intersection Summary												
HCM 2010 Ctrl Delay			9.3									
HCM 2010 LOS			A									

Approach	ES	NB	NE	SB
Crosswalk Length (ft)	59.0	45.3	40.1	58.4
Crosswalk Width (ft)	12.0	12.0	12.0	12.0
Total Number of Lanes Crossed	4	3	3	4
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	6	2	4	8
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (mph)	30	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-	-
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-	-
Pedestrian Delay (s/p)	40.0	40.0	40.0	40.0
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.22	2.06	2.32	2.44
Pedestrian Crosswalk LOS	B	B	B	B

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Two Way Analysis cannot be performed on Signalized Intersection.

Lanes, Volumes, Timings  
7: Evans Mill Rd & Weller Ave

2020 Buildout (Dbl Ln) AM  
3/26/2015



Lane Group	WBL	WBR	NBL	NBR	SBL	SRT
Lane Configurations	↑ ↘	↑ ↗	↑ ↗		↖ ↘	
Volume (vph)	86	41	179	92	86	320
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	14	15	10	10	10	10
Lane Util. Factor	1.00	1.00	0.95	0.95	0.95	0.95
Fr <sub>t</sub>		0.850	0.949			
Flt Protected	0.950					0.990
Satd. Flow (prot)	1604	1537	2783	0	0	2930
Flt Permitted	0.950					0.990
Satd. Flow (perm)	1604	1537	2783	0	0	2930
Link Speed (mph)	30		30			30
Link Distance (ft)	138		244			240
Travel Time (s)	3.1		5.5			5.5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	8%	4%	0%	10%	8%	1%
Adj. Flow (vph)	93	45	195	100	93	348
Shared Lane Traffic (%)						
Lane Group Flow (vph)	93	45	295	0	0	441
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	14		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.05	1.01	1.25	1.25	1.25	1.25
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

**Intersection Summary**

Area Type: CBD

Control Type: Unsignalized

Intersection Capacity Utilization 36.7%

ICU Level of Service A

Analysis Period (min) 15

**Intersection:**

Int Delay, s/veh 3.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	86	41	179	92	86	320
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	8	4	0	10	8	1
Mvmt Flow	93	45	195	100	93	348

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	606	147	0 0 295 0
Stage 1	245	-	- -
Stage 2	361	-	- -
Critical Hdwy	6.96	6.98	- - 4.26 -
Critical Hdwy Stg 1	5.96	-	- -
Critical Hdwy Stg 2	5.96	-	- -
Follow-up Hdwy	3.58	3.34	- - 2.28 -
Pot Cap-1 Maneuver	415	867	- - 1221 -
Stage 1	755	-	- -
Stage 2	658	-	- -
Platoon blocked, %		- -	- -
Mov Cap-1 Maneuver	376	867	- - 1221 -
Mov Cap-2 Maneuver	376	-	- -
Stage 1	755	-	- -
Stage 2	596	-	- -

Approach	WB	NB	SB
HCM Control Delay, s	15	0	2
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WB Ln1	WB Ln2	SBL	SBT
Capacity (veh/h)	-	-	376	867	1221	-
HCM Lane V/C Ratio	-	-	0.249	0.051	0.077	-
HCM Control Delay (s)	-	-	17.7	9.4	8.2	0.3
HCM Lane LOS	-	-	C	A	A	A
HCM 95th %tile Q(veh)	-	-	1	0.2	0.2	-

Lanes, Volumes, Timings  
11: Jefferson St & Site Entr

2020 Buildout (Dbl Ln) AM  
3/26/2015

Lane Group	WBL	WBK	NET	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	67	158	467	161	251	184
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%		-6%			4%
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95
Ped Bike Factor						
Fr <sub>t</sub>		0.850	0.965			
Flt Protected	0.950					0.972
Satd. Flow (prot)	1593	1425	1666	0	0	3034
Flt Permitted	0.950					0.972
Satd. Flow (perm)	1593	1425	1666	0	0	3034
Link Speed (mph)	30		30			30
Link Distance (ft)	303		394			350
Travel Time (s)	6.9		9.0			8.0
Confl. Peds. (#/hr)	50			20	20	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	73	172	508	175	273	200
Shared Lane Traffic (%)						
Lane Group Flow (vph)	73	172	683	0	0	473
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		15			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.14	1.14	1.10	1.10	1.17	1.17
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

**Intersection Summary**

Area Type: CBD  
Control Type: Unsignalized  
Intersection Capacity Utilization 68.3%  
Analysis Period (min) 15

ICU Level of Service C

**Intersection**

Int Delay, s/veh 9.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	67	158	467	161	251	184
Conflicting Peds, #/hr	50	0	0	20	20	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	-6	-	-	4
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	73	172	508	175	273	200

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	1291	665	0	0	733
Stage 1	645	-	-	-	-
Stage 2	646	-	-	-	-
Critical Hdwy	6.63	6.23	-	-	4.12
Critical Hdwy Stg 1	5.43	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-
Follow-up Hdwy	3.519	3,319	-	-	2,218
Pot Cap-1 Maneuver	167	459	-	-	872
Stage 1	521	-	-	-	-
Stage 2	485	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	101	433	-	-	857
Mov Cap-2 Maneuver	101	-	-	-	-
Stage 1	499	-	-	-	-
Stage 2	306	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	43.6	0	6.6
HCM LOS	E		

Minor Lane/Major Min1	NBT	NBR	WBLn1/WBLn2	SBL	SBT
Capacity (veh/h)	-	-	101 433	857	-
HCM Lane V/C Ratio	-	-	0.721 0.397	0.318	-
HCM Control Delay (s)	-	-	102.4 18.7	11.2	0.5
HCM Lane LOS	-	-	F C	B A	
HCM 95th %tile Q(veh)	-	-	3.8 1.9	1.4	-

Lanes, Volumes, Timings  
14: Jefferson St & Reserve Ave

2020 Buildout (Dbl Ln) AM

3/26/2015

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	221	32	51	0	32	126	53	497	5	65	480	173
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	15	15	12	12	12	11	11	11	11	11	15
Grade (%)		0%			0%			-5%			0%	
Storage Length (ft)	0		0	100		0	100		0	220		80
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	25			100			150			180		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00
Frt		0.908			0.881			0.999				0.850
Flt Protected	0.950						0.950			0.950		
Satd. Flow (prot)	1593	1674	0	1676	1477	0	1578	1659	0	1540	3079	1568
Flt Permitted	0.638						0.344			0.396		
Satd. Flow (perm)	1070	1674	0	1676	1477	0	571	1659	0	642	3079	1568
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)	55				137			1				205
Link Speed (mph)	30				30			30				30
Link Distance (ft)	551				718			1530				504
Travel Time (s)	12.5				16.3			34.8				11.5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	240	35	55	0	35	137	58	540	5	71	522	188
Shared Lane Traffic (%)												
Lane Group Flow (vph)	240	90	0	0	172	0	58	545	0	71	522	188
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(ft)	12				12			11				11
Link Offset(ft)	0				0			0				0
Crosswalk Width(ft)	16				16			16				16
Two way Left Turn Lane												
Headway Factor	1.14	1.01	1.01	1.14	1.14	1.14	1.16	1.16	1.16	1.19	1.19	1.01
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100		20	100	20
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)	94			94			94			94		
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		0.0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	

Lanes, Volumes, Timings  
14: Jefferson St & Reserve Ave

2020 Buildout (Dbl Ln) AM

3/26/2015



Lane Group	FBI	FPT	FPR	WAL	WBT	WFIS	NBL	NBT	NBR	SPL	SBT	SBR
Permitted Phases	4			8			2			6		6
Detector Phase	4	4		8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		4.0	30.0		4.0	30.0	30.0
Minimum Split (s)	22.0	22.0		22.0	22.0		18.0	36.0		10.0	36.0	36.0
Total Split (s)	26.0	26.0		26.0	26.0		18.0	44.0		10.0	36.0	36.0
Total Split (%)	32.5%	32.5%		32.5%	32.5%		22.5%	55.0%		12.5%	45.0%	45.0%
Maximum Green (s)	20.0	20.0		20.0	20.0		12.0	38.0		4.0	30.0	30.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Lead/Lag							Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		0.2	6.0		0.2	6.0	6.0
Recall Mode	Max	Max		Max	Max		Max	C-Min		Max	C-Min	C-Min
Walk Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	5.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0			11.0			11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0			0			0	0
Act Effct Green (s)	20.0	20.0		20.0			48.0	38.0		34.0	30.0	30.0
Actuated g/C Ratio	0.25	0.25		0.25			0.60	0.48		0.42	0.38	0.38
v/c Ratio	0.90	0.20		0.36			0.12	0.69		0.22	0.45	0.26
Control Delay	66.5	12.7		9.7			4.3	17.2		10.0	20.4	3.2
Queue Delay	0.0	0.0		0.0			0.0	0.0		0.0	0.0	0.0
Total Delay	66.5	12.7		9.7			4.3	17.2		10.0	20.4	3.2
LOS	E	B		A			A	B		A	C	A
Approach Delay		51.8		9.7				15.9			15.3	
Approach LOS		D		A				B			B	

Intersection Summary

Area Type: CBD

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 8 (10%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 21.4

Intersection LOS: C

Intersection Capacity Utilization 77.5%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 14: Jefferson St & Reserve Ave



HCM 2010 Signalized Intersection Summary  
14: Jefferson St & Reserve Ave

2020 Buildout (Dbl Ln) AM  
3/26/2015

Movement	EBL	EBT	EBC	WBL	WBT	WBC	NBL	NBT	NBC	SBL	SBT	SBC
Lane Configurations	1	1	1	1	1	1	1	1	1	1	1	1
Volume (veh/h)	221	32	51	0	32	126	53	497	5	65	480	173
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1676	1744	1778	1676	1676	1710	1718	1718	1753	1676	1676	1744
Adj Flow Rate, veh/h	240	35	55	0	35	137	58	540	5	71	522	0
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	254	153	240	90	75	293	540	807	7	380	1194	556
Arrive On Green	0.25	0.25	0.25	0.00	0.25	0.25	0.20	0.63	0.63	0.05	0.38	0.00
Sat Flow, veh/h	1087	612	962	1171	299	1171	1637	1700	16	1597	3185	1482
Grp Volume(v), veh/h	240	0	90	0	0	172	58	0	545	71	522	0
Grp Sat Flow(s), veh/h/ln	1087	0	1574	1171	0	1470	1637	0	1716	1597	1593	1482
Q Serve(g_s), s	12.0	0.0	3.6	0.0	0.0	8.0	1.3	0.0	16.2	2.1	9.8	0.0
Cycle Q Clear(g_c), s	20.0	0.0	3.6	0.0	0.0	8.0	1.3	0.0	16.2	2.1	9.8	0.0
Prop In Lane	1.00		0.61	1.00		0.80	1.00		0.01	1.00		1.00
Lane Grp Cap(c), veh/h	254	0	393	90	0	367	540	0	815	380	1194	556
V/C Ratio(X)	0.95	0.00	0.23	0.00	0.00	0.47	0.11	0.00	0.67	0.19	0.44	0.00
Avail Cap(c_a), veh/h	254	0	393	90	0	367	540	0	815	380	1194	556
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	0.00	0.00	1.00	0.82	0.00	0.82	1.00	1.00	0.00
Uniform Delay (d), s/veh	35.9	0.0	23.9	0.0	0.0	25.5	8.8	0.0	10.7	14.3	18.7	0.0
Incr Delay (d2), s/veh	44.1	0.0	1.4	0.0	0.0	4.2	0.3	0.0	3.6	1.1	1.2	0.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	8.4	0.0	1.7	0.0	0.0	3.6	0.6	0.0	8.3	1.0	4.5	0.0
LnGrp Delay(d), s/veh	80.0	0.0	25.2	0.0	0.0	29.7	9.1	0.0	14.3	15.4	19.9	0.0
LnGrp LOS	E		C			C	A		B	B	B	
Approach Vol, veh/h		330			172				603			593
Approach Delay, s/veh		65.1			29.7				13.8			19.3
Approach LOS		E			C				B			B
Time	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	10.0	44.0		26.0	18.0	36.0		26.0				
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0				
Max Green Setting (Gmax), s	4.0	38.0		20.0	12.0	30.0		20.0				
Max Q Clear Time (g_c+l1), s	4.1	18.2		22.0	3.3	11.8		10.0				
Green Ext Time (p_c), s	0.0	13.6		0.0	0.0	12.8		1.9				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			27.3									
HCM 2010 LOS			C									

Approach	EB	WB	NB	SB
Crosswalk Length (ft)	39.1	36.5	46.3	45.1
Crosswalk Width (ft)	12.0	12.0	12.0	12.0
Total Number of Lanes Crossed	3	3	4	4
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	6	2	4	8
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (mph)	30	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-	-
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-	-
Pedestrian Delay (s/p)	40.0	40.0	40.0	40.0
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.14	2.04	2.42	2.55
Pedestrian Crosswalk LOS	B	B	B	B

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Two Way Analysis cannot be performed on Signalized Intersection.

## Lanes, Volumes, Timings

2020 Buildout (Dbl Ln) PM

3: Jefferson/Jefferson St &amp; McClanahan St/Yellow Mountain Rd

3/26/2015

Lane Group	EBL	EST	EBR	WBL	WBT	WEB	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	212	158	21	5	63	32	63	96	5	128	206	273
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	10	10	10	12	16	12	11	11	10
Grade (%)					-6%			-4%			4%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99			1.00	0.97		0.99			0.99	0.94
Frt		0.993				0.850		0.996				0.850
Flt Protected		0.974				0.997		0.981			0.981	
Satd. Flow (prot)	0	1641	0	0	1639	1397	0	1683	0	0	1579	1291
Flt Permitted		0.792				0.972		0.768			0.810	
Satd. Flow (perm)	0	1325	0	0	1597	1350	0	1307	0	0	1293	1214
Right Turn on Red			No			Yes			Yes			Yes
Satd. Flow (RTOR)						41		2				297
Link Speed (mph)		30				30		30			30	
Link Distance (ft)		368				600		400			394	
Travel Time (s)		8.4				13.6		9.1			9.0	
Confl. Peds. (#/hr)	9		7	7		9	25		19	19		25
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	0%	0%	0%	0%	0%	2%	4%	0%	0%	1%	3%
Parking (#/hr)	0	0	0				0	0	0			
Adj. Flow (vph)	230	172	23	5	68	35	68	104	5	139	224	297
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	425	0	0	73	35	0	177	0	0	363	297
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.16	1.13	1.16	1.20	1.20	1.20	1.12	1.09	1.12	1.22	1.22	1.28
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

## Lanes, Volumes, Timings

2020 Buildout (Dbl Ln) PM

3: Jefferson/Jefferson St &amp; McClanahan St/Yellow Mountain Rd

3/26/2015



Lane Group	EBL	EBT	EBC	WBL	WBT	WBC	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases			4			8			2			6
Permitted Phases	4				8		8		2		6	
Detector Phase	4	4		8	8		8	2	2		6	6
Switch Phase												
Minimum Initial (s)	12.0	12.0		12.0	12.0		12.0	12.0		12.0	12.0	12.0
Minimum Split (s)	31.0	31.0		31.0	31.0		31.0	31.0		31.0	31.0	31.0
Total Split (s)	40.0	40.0		40.0	40.0		40.0	40.0		40.0	40.0	40.0
Total Split (%)	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	50.0%
Maximum Green (s)	34.0	34.0		34.0	34.0		34.0	34.0		34.0	34.0	34.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0			0.0	0.0		0.0			0.0	0.0	
Total Lost Time (s)	6.0			6.0	6.0		6.0			6.0	6.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	4.5	4.5		4.5	4.5		4.5	4.5		4.5	4.5	4.5
Recall Mode	None	None		None	None		C-Min	C-Min		C-Min	C-Min	C-Min
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	18.0	18.0		18.0	18.0		18.0	18.0		18.0	18.0	18.0
Pedestrian Calls (#/hr)	16	16		16	16		44	44		44	44	44
Act Effct Green (s)	30.3			30.3	30.3		37.7			37.7	37.7	
Actuated g/C Ratio	0.38			0.38	0.38		0.47			0.47	0.47	
v/c Ratio	0.85			0.12	0.07		0.29			0.60	0.41	
Control Delay	39.1			15.1	4.5		15.7			16.2	2.3	
Queue Delay	0.0			0.0	0.0		0.0			0.0	0.0	
Total Delay	39.1			15.1	4.5		15.7			16.2	2.3	
LOS	D			B	A		B			B	A	
Approach Delay	39.1			11.7			15.7			9.9		
Approach LOS	D			B			B			A		

**Intersection Summary**

Area Type: CBD

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 55 (69%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 19.9

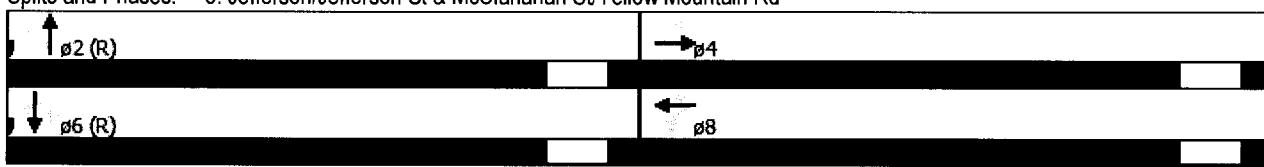
Intersection LOS: B

Intersection Capacity Utilization 87.1%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 3: Jefferson/Jefferson St &amp; McClanahan St/Yellow Mountain Rd



HCM 2010 Signalized Intersection Summary  
3: Jefferson/Jefferson St & McClanahan St/Yellow Mountain Rd

2020 Buildout (Dbl Ln) PM  
3/26/2015

Movement	EBl	ERT	EBR	WBl	WBT	WBR	NBl	NBT	NBR	SBl	SBT	SBR
Lane Configurations		↔	→	↓	↖	↙	↑	↗	↘	↓	↖	↙
Volume (veh/h)	212	158	21	5	63	32	63	96	5	128	206	273
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	1.00		0.99	0.99		0.95	0.99		0.97
Parking Bus, Adj	1.00	1.00	0.90	1.00	1.00	1.00	1.00	1.00	0.90	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1693	1732	1693	1761	1761	1761	1744	1759	1744	1676	1666	1627
Adj Flow Rate, veh/h	230	172	23	5	68	35	68	104	5	139	224	297
Adj No. of Lanes	0	1	0	0	1	1	0	1	0	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0	4	4	4	1	1	3
Cap, veh/h	313	197	25	67	657	577	210	287	13	280	416	619
Arrive On Green	0.39	0.39	0.39	0.39	0.39	0.39	0.46	0.46	0.46	0.77	0.77	0.77
Sat Flow, veh/h	624	506	65	48	1685	1480	321	623	27	474	903	1345
Grp Volume(v), veh/h	425	0	0	73	0	35	177	0	0	363	0	297
Grp Sat Flow(s), veh/h/ln	1194	0	0	1733	0	1480	971	0	0	1377	0	1345
Q Serve(g_s), s	25.1	0.0	0.0	0.0	0.0	1.2	4.5	0.0	0.0	0.0	0.0	6.5
Cycle Q Clear(g_c), s	27.2	0.0	0.0	2.1	0.0	1.2	13.3	0.0	0.0	8.8	0.0	6.5
Prop In Lane	0.54		0.05	0.07		1.00	0.38		0.03	0.38		1.00
Lane Grp Cap(c), veh/h	535	0	0	724	0	577	509	0	0	696	0	619
V/C Ratio(X)	0.79	0.00	0.00	0.10	0.00	0.06	0.35	0.00	0.00	0.52	0.00	0.48
Avail Cap(c_a), veh/h	578	0	0	783	0	629	509	0	0	696	0	619
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.7	0.0	0.0	15.5	0.0	15.3	15.0	0.0	0.0	5.9	0.0	5.7
Incr Delay (d2), s/veh	8.0	0.0	0.0	0.1	0.0	0.1	1.9	0.0	0.0	2.8	0.0	2.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	10.0	0.0	0.0	1.0	0.0	0.5	3.0	0.0	0.0	3.6	0.0	2.8
LnGrp Delay(d), s/veh	31.6	0.0	0.0	15.6	0.0	15.3	16.8	0.0	0.0	8.7	0.0	8.4
LnGrp LOS	C		B		B	B			A		A	
Approach Vol, veh/h	425			108			177			660		
Approach Delay, s/veh	31.6			15.5			16.8			8.5		
Approach LOS	C		B		B		B			A		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	42.8		37.2		42.8		37.2					
Change Period (Y+Rc), s	6.0		6.0		6.0		6.0					
Max Green Setting (Gmax), s	34.0		34.0		34.0		34.0					
Max Q Clear Time (g_c+l), s	15.3		29.2		10.8		4.1					
Green Ext Time (p_c), s	7.4		2.0		8.2		6.1					
Intersection Summary												
HCM 2010 Ctrl Delay			17.3									
HCM 2010 LOS			B									

Approach	EB	WB	NB	SB
Crosswalk Length (ft)	29.8	32.2	28.2	35.0
Crosswalk Width (ft)	12.0	12.0	12.0	12.0
Total Number of Lanes Crossed	2	3	2	3
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	6	2	4	8
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (mph)	30	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-	-
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-	-
Pedestrian Delay (s/p)	40.0	40.0	40.0	40.0
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.14	2.08	1.93	2.28
Pedestrian Crosswalk LOS	B	B	A	B

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Two Way Analysis cannot be performed on Signalized Intersection.

Lanes, Volumes, Timings  
6: Jefferson St & Weller Ave/Flannagan Dr

2020 Buildout (Dbl Ln) PM

3/26/2015

Lane Group	EBL	EPT	EPR	NBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	→	↓	↙	↔	←	↖	↑	↗	↘	↓	↙
Volume (vph)	47	67	117	41	9	47	39	336	26	61	457	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	14	14	11	11	12	12	16	12	12	12	12
Grade (%)					-3%			-6%			-5%	
Storage Length (ft)	0		0	0		0	0		80	0		85
Storage Lanes	1		0	0		1	0		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor	0.99				1.00			1.00			1.00	0.99
Frt	0.905					0.850		0.991				0.850
Flt Protected	0.950				0.961			0.995				0.994
Satd. Flow (prot)	1554	1584	0	0	1561	1341	0	1912	0	0	3253	1461
Flt Permitted	0.721				0.523			0.914			0.853	
Satd. Flow (perm)	1180	1584	0	0	848	1341	0	1757	0	0	2791	1441
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)	120					51			6			63
Link Speed (mph)	30				30			30			30	
Link Distance (ft)	138				151			350			1530	
Travel Time (s)	3.1				3.4			8.0			34.8	
Confl. Peds. (#/hr)			4	4			2		1	1		2
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	8%	0%	5%	4%	0%	10%	0%	3%	4%	0%	2%	2%
Adj. Flow (vph)	51	73	127	45	10	51	42	365	28	66	497	63
Shared Lane Traffic (%)												
Lane Group Flow (vph)	51	200	0	0	55	51	0	435	0	0	563	63
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(ft)	13				13			0			11	
Link Offset(ft)	0				0			0			0	
Crosswalk Width(ft)	16				16			16			16	
Two way Left Turn Lane												
Headway Factor	1.10	1.05	1.05	1.17	1.17	1.12	1.10	0.94	1.10	1.11	1.11	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	

Lanes, Volumes, Timings  
6: Jefferson St & Weller Ave/Flannagan Dr

2020 Buildout (Dbl Ln) PM

3/26/2015

Lane Group	E BL	E BT	E BR	WB	W BT	W BR	WB	N BT	N BR	S BL	S BT	S BR
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases		4			8		8	2			6	6
Permitted Phases	4			8	8	8	2			6		6
Detector Phase	4	4		8	8	8	2	2		6	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	12.0	12.0		12.0	12.0	12.0
Minimum Split (s)	31.0	31.0		31.0	31.0	31.0	31.0	31.0		34.0	34.0	34.0
Total Split (s)	34.0	34.0		34.0	34.0	34.0	46.0	46.0		46.0	46.0	46.0
Total Split (%)	42.5%	42.5%		42.5%	42.5%	42.5%	57.5%	57.5%		57.5%	57.5%	57.5%
Maximum Green (s)	28.0	28.0		28.0	28.0	28.0	40.0	40.0		40.0	40.0	40.0
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0			6.0	6.0		6.0			6.0	6.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	4.5	4.5		4.5	4.5	4.5	6.0	6.0		6.0	6.0	6.0
Recall Mode	None	None		None	None	None	C-Min	C-Min		C-Min	C-Min	C-Min
Walk Time (s)	7.0	7.0								7.0	7.0	7.0
Flash Dont Walk (s)	18.0	18.0								21.0	21.0	21.0
Pedestrian Calls (#/hr)	4	4								3	3	3
Act Effct Green (s)	13.2	13.2		13.2	13.2		54.8				54.8	54.8
Actuated g/C Ratio	0.16	0.16		0.16	0.16		0.68				0.68	0.68
v/c Ratio	0.26	0.56		0.40	0.19		0.36				0.29	0.06
Control Delay	29.6	17.9		35.5	8.9		5.4				2.0	0.2
Queue Delay	0.0	0.0		0.0	0.0		0.0				0.0	0.0
Total Delay	29.6	17.9		35.5	8.9		5.4				2.0	0.2
LOS	C	B		D	A		A				A	A
Approach Delay		20.2			22.7		5.4				1.8	
Approach LOS		C		C			A				A	

**Intersection Summary**

Area Type: CBD

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 54 (68%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.56

Intersection Signal Delay: 7.7

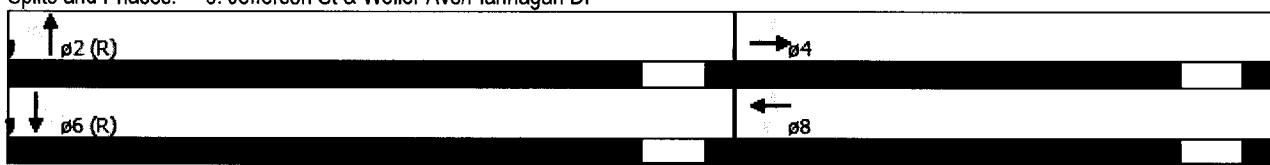
Intersection LOS: A

Intersection Capacity Utilization 85.4%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 6: Jefferson St & Weller Ave/Flannagan Dr



thl/msa

Page 7

HCM 2010 Signalized Intersection Summary  
6: Jefferson St & Weller Ave/Flannagan Dr

2020 Buildout (Dbl Ln) PM  
3/26/2015

Movement	EBL	EBT	EBC	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑	→	→	↓	←	←	↖	↖	↑	↖	↖
Volume (veh/h)	47	67	117	41	9	47	39	336	26	61	457	58
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A <sub>pbT</sub> )	0.99		1.00	1.00		0.99	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1647	1724	1778	1736	1681	1578	1761	1782	1761	1753	1722	1718
Adj Flow Rate, veh/h	51	73	127	45	10	51	42	365	28	66	497	63
Adj No. of Lanes	1	1	0	0	1	1	0	1	0	0	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	8	0	0	0	0	10	3	3	3	2	2	2
Cap, veh/h	207	139	242	207	37	328	109	868	64	228	1611	880
Arrive On Green	0.25	0.25	0.25	0.25	0.25	0.25	1.00	1.00	1.00	0.20	0.20	0.20
Sat Flow, veh/h	1175	564	981	508	151	1330	98	1438	106	286	2670	1459
Grp Volume(v), veh/h	51	0	200	55	0	51	435	0	0	284	279	63
Grp Sat Flow(s),veh/h/ln	1175	0	1545	658	0	1330	1643	0	0	1468	1489	1459
Q Serve(g_s), s	3.3	0.0	9.0	2.8	0.0	2.4	0.0	0.0	0.0	5.6	12.8	2.8
Cycle Q Clear(g_c), s	15.0	0.0	9.0	11.8	0.0	2.4	0.0	0.0	0.0	12.2	12.8	2.8
Prop In Lane	1.00		0.63	0.82		1.00	0.10		0.06	0.23		1.00
Lane Grp Cap(c), veh/h	207	0	381	244	0	328	1040	0	0	941	898	880
V/C Ratio(X)	0.25	0.00	0.52	0.23	0.00	0.16	0.42	0.00	0.00	0.30	0.31	0.07
Avail Cap(c_a), veh/h	329	0	541	362	0	466	1040	0	0	941	898	880
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	0.33	0.33	0.33
Upstream Filter(l)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	0.87	0.87	0.87
Uniform Delay (d), s/veh	33.9	0.0	26.1	29.4	0.0	23.6	0.0	0.0	0.0	17.3	17.8	13.8
Incr Delay (d2), s/veh	1.0	0.0	1.9	0.8	0.0	0.4	1.2	0.0	0.0	0.7	0.8	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	4.0	1.1	0.0	0.9	0.4	0.0	0.0	5.5	5.5	1.2
LnGrp Delay(d),s/veh	34.9	0.0	28.0	30.2	0.0	24.0	1.2	0.0	0.0	18.1	18.6	14.0
LnGrp LOS	C	C	C	C	A				B	B	B	
Approach Vol, veh/h		251			106			435			626	
Approach Delay, s/veh		29.4			27.2			1.2			17.9	
Approach LOS		C			C			A			B	
Timers	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	54.3		25.7		54.3		25.7					
Change Period (Y+Rc), s	6.0		6.0		6.0		6.0					
Max Green Setting (Gmax), s	40.0		28.0		40.0		28.0					
Max Q Clear Time (g_c+l1), s	2.0		17.0		14.8		13.8					
Green Ext Time (p_c), s	20.4		2.2		15.8		2.6					
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			15.5									
HCM 2010 LOS			B									

Approach	EB	WB	NB	SB
Crosswalk Length (ft)	59.0	45.3	40.1	58.4
Crosswalk Width (ft)	12.0	12.0	12.0	12.0
Total Number of Lanes Crossed	4	3	3	4
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	6	2	4	8
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (mph)	30	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-	-
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-	-
Pedestrian Delay (s/p)	40.0	40.0	40.0	40.0
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.23	2.03	2.30	2.40
Pedestrian Crosswalk LOS	B	B	B	B

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Two Way Analysis cannot be performed on Signalized Intersection.

Lanes, Volumes, Timings  
7: Evans Mill Rd & Weller Ave

2020 Buildout (Dbl Ln) PM  
3/26/2015



Lane Group	WBL	WRP	NBT	NBR	SBL	SPT
Lane Configurations	↑	↑	↑↓		↑	↑↓
Volume (vph)	72	35	152	97	135	383
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	14	15	10	10	10	10
Lane Util. Factor	1.00	1.00	0.95	0.95	0.95	0.95
Ped Bike Factor						
Frt		0.850	0.942			
Flt Protected	0.950					0.987
Satd. Flow (prot)	1699	1599	2760	0	0	2977
Flt Permitted	0.950					0.987
Satd. Flow (perm)	1699	1599	2760	0	0	2977
Link Speed (mph)	30		30			30
Link Distance (ft)	138		244			240
Travel Time (s)	3.1		5.5			5.5
Confl. Peds. (#/hr)				2	2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	0%	9%	2%	0%
Adj. Flow (vph)	78	38	165	105	147	416
Shared Lane Traffic (%)						
Lane Group Flow (vph)	78	38	270	0	0	563
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	14		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.05	1.01	1.25	1.25	1.25	1.25
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: CBD

Control Type: Unsignalized

Intersection Capacity Utilization 39.1%

ICU Level of Service A

Analysis Period (min) 15

**Intersection:**

Int Delay, s/veh 3.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	72	35		152 97	135	383
Conflicting Peds, #/hr	0	0		0 2	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop		- None		- None
Storage Length	0	0		- -	-	-
Veh in Median Storage, #	0	-		0 -	-	0
Grade, %	0	-		0 -	-	0
Peak Hour Factor	92	92		92 92	92	92
Heavy Vehicles, %	2	0		0 9	2	0
Mvmt Flow	78	38		165 105	147	416

Major Minor	Minor1	Major1	Major2
Conflicting Flow All	720	137	
Stage 1	218	-	-
Stage 2	502	-	-
Critical Hdwy	6.84	6.9	
Critical Hdwy Stg 1	5.84	-	-
Critical Hdwy Stg 2	5.84	-	-
Follow-up Hdwy	3.52	3.3	
Pot Cap-1 Maneuver	363	893	
Stage 1	797	-	-
Stage 2	573	-	-
Platoon blocked, %		- -	- -
Mov Cap-1 Maneuver	308	892	
Mov Cap-2 Maneuver	308	-	
Stage 1	797	-	-
Stage 2	487	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.9	0	2.4
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	308	892	1287	-
HCM Lane V/C Ratio	-	-	0.254	0.043	0.114	-
HCM Control Delay (s)	-	-	20.6	9.2	8.2	0.4
HCM Lane LOS	-	-	C	A	A	A
HCM 95th %tile Q(veh)	-	-	1	0.1	0.4	-



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙	↗	↑	↖	↘	↔
Volume (vph)	192	128	274	66	201	415
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Grade (%)	0%		-6%			4%
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95
Ped Bike Factor						
Frt		0.850	0.974			
Flt Protected	0.950					0.984
Satd. Flow (prot)	1593	1425	1682	0	0	3072
Flt Permitted	0.950					0.984
Satd. Flow (perm)	1593	1425	1682	0	0	3072
Link Speed (mph)	30		30			30
Link Distance (ft)	342		394			350
Travel Time (s)	7.8		9.0			8.0
Confl. Peds. (#/hr)	50			20	20	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	209	139	298	72	218	451
Shared Lane Traffic (%)						
Lane Group Flow (vph)	209	139	370	0	0	669
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		15			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.14	1.14	1.10	1.10	1.17	1.17
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

#### Intersection Summary

Area Type: CBD

Control Type: Unsignalized

Intersection Capacity Utilization 61.9%

ICU Level of Service B

Analysis Period (min) 15

**Intersection**

Int Delay, s/veh 34.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	192	128	274	66	201	415
Conflicting Peds, #/hr	50	0	0	20	20	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	-6	-	-	4
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	209	139	298	72	218	451

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	1047	404	0 0 420 0
Stage 1	384	-	- - -
Stage 2	663	-	- - -
Critical Hdwy	6.63	6.23	- - 4.12 -
Critical Hdwy Stg 1	5.43	-	- - -
Critical Hdwy Stg 2	5.83	-	- - -
Follow-up Hdwy	3.519	3.319	- - 2.218 -
Pot Cap-1 Maneuver	238	646	- - 1139 -
Stage 1	688	-	- - -
Stage 2	475	-	- - -
Platoon blocked, %		- -	- -
Mov Cap-1 Maneuver	~ 166	609	- - 1120 -
Mov Cap-2 Maneuver	~ 166	-	- - -
Stage 1	659	-	- - -
Stage 2	346	-	- - -

Approach	WB	NB	SB
HCM Control Delay, s	130.8	0	3.3
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBL	WBR	Ln2	SBL	SBT
Capacity (veh/h)	-	-	166	609	1120	-	
HCM Lane V/C Ratio	-	-	1.257	0.228	0.195	-	
HCM Control Delay (s)	-	-	209.5	12.7	9	0.6	
HCM Lane LOS	-	-	F	B	A	A	
HCM 95th %tile Q(veh)	-	-	11.9	0.9	0.7	-	

**Notes**

~: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon

Lanes, Volumes, Timings  
14: Jefferson St & Reserve Ave

2020 Buildout (Dbl Ln) PM  
3/26/2015

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	194	26	53	5	37	184	11	382	5	34	517	284
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	15	15	12	12	12	11	11	11	11	11	15
Grade (%)		0%			0%			-5%			0%	
Storage Length (ft)	0		0	100		0	100		0	220		80
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	25			100			150			180		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00
Frt		0.899			0.875			0.998				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1593	1658	0	1593	1467	0	1578	1658	0	1540	3079	1568
Flt Permitted	0.511			0.701			0.321			0.517		
Satd. Flow (perm)	857	1658	0	1175	1467	0	533	1658	0	838	3079	1568
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		58			200			1				309
Link Speed (mph)		30			30			30				30
Link Distance (ft)		551			718			1530				504
Travel Time (s)		12.5			16.3			34.8				11.5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	211	28	58	5	40	200	12	415	5	37	562	309
Shared Lane Traffic (%)												
Lane Group Flow (vph)	211	86	0	5	240	0	12	420	0	37	562	309
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(ft)	12				12			11				11
Link Offset(ft)	0				0			0				0
Crosswalk Width(ft)	16				16			16				16
Two way Left Turn Lane												
Headway Factor	1.14	1.01	1.01	1.14	1.14	1.14	1.16	1.16	1.16	1.19	1.19	1.01
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100		20	100	20
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94				94
Detector 2 Size(ft)		6			6			6				6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	

Lanes, Volumes, Timings  
14: Jefferson St & Reserve Ave

2020 Buildout (Dbl Ln) PM  
3/26/2015

Lane Group	EB	EBT	EBR	WB	WBT	WBR	NBL	NBT	NBR	SB	SBT	SBR
Permitted Phases	4			8			2			6		6
Detector Phase	4	4		8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		4.0	30.0		4.0	30.0	30.0
Minimum Split (s)	22.0	22.0		22.0	22.0		18.0	36.0		10.0	36.0	36.0
Total Split (s)	26.0	26.0		26.0	26.0		18.0	44.0		10.0	36.0	36.0
Total Split (%)	32.5%	32.5%		32.5%	32.5%		22.5%	55.0%		12.5%	45.0%	45.0%
Maximum Green (s)	20.0	20.0		20.0	20.0		12.0	38.0		4.0	30.0	30.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Lead/Lag							Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		0.2	6.0		0.2	6.0	6.0
Recall Mode	Max	Max		Max	Max		Max	C-Min		Max	C-Min	C-Min
Walk Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	5.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0			11.0			11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0			0			0	0
Act Effct Green (s)	20.0	20.0		20.0	20.0		48.0	38.0		34.0	30.0	30.0
Actuated g/C Ratio	0.25	0.25		0.25	0.25		0.60	0.48		0.42	0.38	0.38
v/c Ratio	0.99	0.19		0.02	0.47		0.03	0.53		0.09	0.49	0.40
Control Delay	92.0	11.8		23.0	9.4		5.2	17.6		8.5	20.9	3.9
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	92.0	11.8		23.0	9.4		5.2	17.6		8.5	20.9	3.9
LOS	F	B		C	A		A	B		A	C	A
Approach Delay		68.8			9.7			17.3			14.6	
Approach LOS		E			A			B			B	

**Intersection Summary**

Area Type: CBD

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 8 (10%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.99

Intersection Signal Delay: 23.1

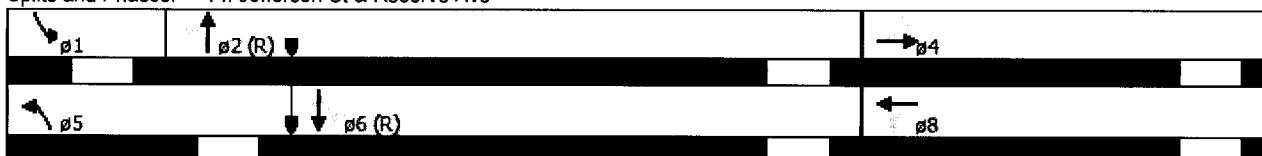
Intersection LOS: C

Intersection Capacity Utilization 73.1%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 14: Jefferson St & Reserve Ave



HCM 2010 Signalized Intersection Summary  
14: Jefferson St & Reserve Ave

2020 Buildout (Dbl Ln) PM  
3/26/2015

Movement	EBL	EOT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SOT	SBR
Lane Configurations	↑	↓		↑	↓		↑	↓		↑	↑↑	↑
Volume (veh/h)	194	26	53	5	37	184	11	382	5	34	517	284
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1676	1744	1778	1676	1676	1710	1718	1718	1753	1676	1676	1744
Adj Flow Rate, veh/h	211	28	58	5	40	200	12	415	5	37	562	0
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	195	127	263	332	61	304	523	805	10	495	1194	556
Arrive On Green	0.25	0.25	0.25	0.25	0.25	0.25	0.30	0.95	0.95	0.05	0.38	0.00
Sat Flow, veh/h	1022	507	1051	1175	244	1218	1637	1694	20	1597	3185	1482
Grp Volume(v), veh/h	211	0	86	5	0	240	12	0	420	37	562	0
Grp Sat Flow(s),veh/h/ln	1022	0	1558	1175	0	1462	1637	0	1715	1597	1593	1482
Q Serve(g_s), s	8.2	0.0	3.5	0.3	0.0	11.8	0.2	0.0	1.9	1.1	10.7	0.0
Cycle Q Clear(g_c), s	20.0	0.0	3.5	3.8	0.0	11.8	0.2	0.0	1.9	1.1	10.7	0.0
Prop In Lane	1.00		0.67	1.00		0.83	1.00		0.01	1.00		1.00
Lane Grp Cap(c), veh/h	195	0	390	332	0	365	523	0	815	495	1194	556
V/C Ratio(X)	1.08	0.00	0.22	0.02	0.00	0.66	0.02	0.00	0.52	0.07	0.47	0.00
Avail Cap(c_a), veh/h	195	0	390	332	0	365	523	0	815	495	1194	556
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	0.00	1.00	0.95	0.00	0.95	1.00	1.00	0.00
Uniform Delay (d), s/veh	37.8	0.0	23.8	25.3	0.0	26.9	7.6	0.0	1.1	13.5	19.0	0.0
Incr Delay (d2), s/veh	88.2	0.0	1.3	0.1	0.0	8.9	0.1	0.0	2.2	0.3	1.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.1	0.0	1.6	0.1	0.0	5.6	0.1	0.0	1.0	0.5	4.9	0.0
LnGrp Delay(d),s/veh	126.0	0.0	25.1	25.4	0.0	35.8	7.6	0.0	3.3	13.8	20.3	0.0
LnGrp LOS	F		C	C		D	A		A	B	C	
Approach Vol, veh/h		297			245			432			599	
Approach Delay, s/veh		96.8			35.6			3.4			19.9	
Approach LOS		F			D			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.0	44.0		26.0	18.0	36.0		26.0
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0	6.0		6.0
Max Green Setting (Gmax), s	4.0	38.0		20.0	12.0	30.0		20.0
Max Q Clear Time (g_c+11), s	3.1	3.9		22.0	2.2	12.7		13.8
Green Ext Time (p_c), s	0.0	18.1		0.0	0.0	11.4		1.6

**Intersection Summary**

HCM 2010 Ctrl Delay	32.3
HCM 2010 LOS	C

<b>Approach</b>	<b>EB</b>	<b>WB</b>	<b>NB</b>	<b>SB</b>
Crosswalk Length (ft)	39.1	36.5	46.3	45.1
Crosswalk Width (ft)	12.0	12.0	12.0	12.0
Total Number of Lanes Crossed	3	3	4	4
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	6	2	4	8
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (mph)	30	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-	-
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-	-
Pedestrian Delay (s/p)	40.0	40.0	40.0	40.0
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.16	2.05	2.39	2.56
Pedestrian Crosswalk LOS	B	B	B	B

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Two Way Analysis cannot be performed on Signalized Intersection.

## Lanes, Volumes, Timings

## 2020 Buildout (Dbl Ln &amp; MOD Jeff 2SBT &amp; Rt in) AM

3: Jefferson/Jefferson St &amp; McClanahan St/Yellow Mountain Rd

3/27/2015

Lane Group	EBL	EBT	EBC	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Volume (vph)	254	21	32	5	147	115	26	259	5	38	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	10	10	10	12	16	12	11	10
Grade (%)					-6%			-4%			4%
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99			1.00	0.97		0.99		1.00	0.91
Frt		0.986				0.850		0.998			0.850
Flt Protected		0.960			0.998			0.996			0.985
Satd. Flow (prot)	0	1579	0	0	1609	1397	0	1727	0	0	1526
Flt Permitted		0.655			0.989			0.969			0.842
Satd. Flow (perm)	0	1070	0	0	1594	1356	0	1671	0	0	1299
Right Turn on Red			No			Yes			Yes		Yes
Satd. Flow (RTOR)						125		1			139
Link Speed (mph)		30			30			30			30
Link Distance (ft)		368			600			400			394
Travel Time (s)		8.4			13.6			9.1			9.0
Confl. Peds. (#/hr)	6		13	13		6	45		16	16	45
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	0%	6%	0%	2%	0%	6%	2%	0%	8%	3%
Parking (#/hr)	0	0	0				0	0	0		
Adj. Flow (vph)	276	23	35	5	160	125	28	282	5	41	92
Shared Lane Traffic (%)											
Lane Group Flow (vph)	0	334	0	0	165	125	0	315	0	0	133
Enter Blocked Intersection	No										
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Right
Median Width(ft)	0			0			0			0	
Link Offset(ft)	0			0			0			0	
Crosswalk Width(ft)	16			16			16			16	
Two way Left Turn Lane											
Headway Factor	1.16	1.13	1.16	1.20	1.20	1.20	1.12	1.09	1.12	1.22	1.22
Turning Speed (mph)	15		9	15		9	15		9	15	9
Number of Detectors	1	2		1	2	1	1	2		1	2
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru
Leading Detector (ft)	20	100		20	100	20	20	100		20	100
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel											
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(ft)	94			94			94			94	
Detector 2 Size(ft)		6			6			6		6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex		Cl+Ex	
Detector 2 Channel											
Detector 2 Extend (s)	0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA

## Lanes, Volumes, Timings

## 2020 Buildout (Dbl Ln &amp; MOD Jeff 2SBT &amp; Rt in) AM

3: Jefferson/Jefferson St &amp; McClanahan St/Yellow Mountain Rd

3/27/2015

Lane Group	E BL	E BT	E BR	N BL	N BT	N BR	N BL	N BT	N BR	S BL	S BT	S BR
Protected Phases		4			8			2			6	
Permitted Phases	4				8		8	2			6	
Detector Phase	4	4		8	8	8	2	2		6	6	6
Switch Phase												
Minimum Initial (s)	12.0	12.0		12.0	12.0	12.0	12.0	12.0		12.0	12.0	12.0
Minimum Split (s)	31.0	31.0		31.0	31.0	31.0	31.0	31.0		31.0	31.0	31.0
Total Split (s)	47.0	47.0		47.0	47.0	47.0	33.0	33.0		33.0	33.0	33.0
Total Split (%)	58.8%	58.8%		58.8%	58.8%	58.8%	41.3%	41.3%		41.3%	41.3%	41.3%
Maximum Green (s)	41.0	41.0		41.0	41.0	41.0	27.0	27.0		27.0	27.0	27.0
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0			0.0	0.0		0.0			0.0	0.0	
Total Lost Time (s)	6.0			6.0	6.0		6.0			6.0	6.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5
Recall Mode	None	None		None	None	None	C-Min	C-Min		C-Min	C-Min	C-Min
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	18.0	18.0		18.0	18.0	18.0	18.0	18.0		18.0	18.0	18.0
Pedestrian Calls (#/hr)	19	19		19	19	19	61	61		61	61	61
Act Effct Green (s)	31.9			31.9	31.9		36.1			36.1	36.1	
Actuated g/C Ratio	0.40			0.40	0.40		0.45			0.45	0.45	
v/c Ratio	0.78			0.26	0.20		0.42			0.23	0.23	
Control Delay	33.5			15.5	3.1		19.3			12.0	1.8	
Queue Delay	0.0			0.0	0.0		0.0			0.0	0.0	
Total Delay	33.5			15.5	3.1		19.3			12.0	1.8	
LOS	C			B	A		B			B	A	
Approach Delay	33.5			10.1			19.3			6.8		
Approach LOS	C			B			B			A		

## Intersection Summary

Area Type: CBD

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 56 (70%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 18.2

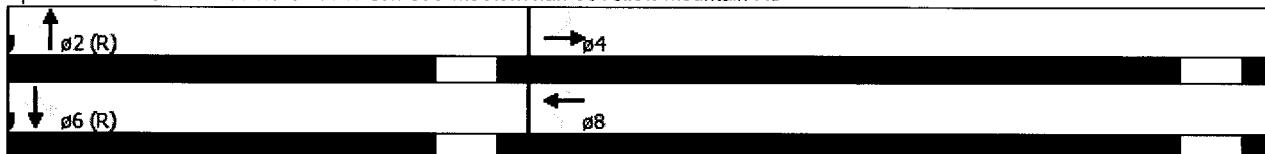
Intersection LOS: B

Intersection Capacity Utilization 70.5%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 3: Jefferson/Jefferson St &amp; McClanahan St/Yellow Mountain Rd



HCM 2010 Signalized Intersection Summary 2020 Buildout (Dbl Ln & MOD Jeff 2SBT & Rt in) AM  
 3: Jefferson/Jefferson St & McClanahan St/Yellow Mountain Rd  
 3/27/2015

Movement	EBL	ECL	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	→	↓	↙	↖	←	↖	↙	↑	↗	↘
Volume (veh/h)	254	21	32	5	147	115	26	259	5	38	85	128
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	1.00		0.99	0.96		0.94	0.98		0.94
Parking Bus, Adj	1.00	1.00	0.90	1.00	1.00	1.00	1.00	1.00	0.90	1.00	1.00	1.00
Adj Sat Flow, veh/h/in	1693	1708	1693	1761	1728	1761	1744	1773	1744	1676	1603	1611
Adj Flow Rate, veh/h	276	23	35	5	160	125	28	282	5	41	92	139
Adj No. of Lanes	0	1	0	0	1	1	0	1	0	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	2	2	0	2	2	2	3	3	4
Cap, veh/h	388	33	40	52	767	661	78	581	10	196	396	520
Arrive On Green	0.45	0.45	0.45	0.45	0.45	0.45	0.40	0.40	0.40	0.67	0.67	0.67
Sat Flow, veh/h	683	73	88	13	1712	1475	71	1445	24	340	986	1293
Grp Volume(v), veh/h	334	0	0	165	0	125	315	0	0	133	0	139
Grp Sat Flow(s), veh/h/in	844	0	0	1724	0	1475	1540	0	0	1326	0	1293
Q Serve(g_s), s	25.5	0.0	0.0	0.0	0.0	4.1	0.0	0.0	0.0	0.0	0.0	3.4
Cycle Q Clear(g_c), s	30.1	0.0	0.0	4.7	0.0	4.1	11.8	0.0	0.0	2.5	0.0	3.4
Prop In Lane	0.83		0.10	0.03		1.00	0.09		0.02	0.31		1.00
Lane Grp Cap(c), veh/h	460	0	0	819	0	661	668	0	0	592	0	520
V/C Ratio(X)	0.73	0.00	0.00	0.20	0.00	0.19	0.47	0.00	0.00	0.22	0.00	0.27
Avail Cap(c_a), veh/h	521	0	0	929	0	756	668	0	0	592	0	520
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	22.3	0.0	0.0	13.5	0.0	13.3	17.8	0.0	0.0	8.3	0.0	8.4
Incr Delay (d2), s/veh	5.4	0.0	0.0	0.2	0.0	0.2	2.4	0.0	0.0	0.9	0.0	1.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/in	7.5	0.0	0.0	2.2	0.0	1.7	5.6	0.0	0.0	1.2	0.0	1.4
LnGrp Delay(d), s/veh	27.7	0.0	0.0	13.7	0.0	13.6	20.2	0.0	0.0	9.2	0.0	9.7
LnGrp LOS	C		B		B	C			A		A	
Approach Vol, veh/h	334			290			315			272		
Approach Delay, s/veh	27.7			13.6			20.2			9.4		
Approach LOS	C		B		B	C			A		A	
Times	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	38.2		41.8		38.2		41.8					
Change Period (Y+Rc), s	6.0		6.0		6.0		6.0					
Max Green Setting (Gmax), s	27.0		41.0		27.0		41.0					
Max Q Clear Time (g_c+1), s	13.8		32.1		5.4		6.7					
Green Ext Time (p_c), s	4.3		3.7		5.5		7.4					
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			18.3									
HCM 2010 LOS			B									

<b>Approach</b>	<b>EB</b>	<b>WB</b>	<b>NB</b>	<b>SB</b>
Crosswalk Length (ft)	29.6	32.4	28.2	33.7
Crosswalk Width (ft)	12.0	12.0	12.0	12.0
Total Number of Lanes Crossed	2	3	2	3
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	6	2	4	8
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (mph)	30	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-	-
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-	-
Pedestrian Delay (s/p)	40.0	40.0	40.0	40.0
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.04	2.06	1.94	2.26
Pedestrian Crosswalk LOS	B	B	A	B

Two Way Analysis cannot be performed on Signalized Intersection.

## Lanes, Volumes, Timings

2020 Buildout (Dbl Ln &amp; MOD Jeff 2SBT &amp; Rt in) AM

6: Jefferson St &amp; Weller Ave/Flannagan Dr

3/27/2015

Lane Group	EBL	EPT	EPR	WBL	WPT	WPR	NBL	NPT	NPR	SBL	SPR	SRP
Lane Configurations												
Volume (vph)	32	82	65	26	11	41	54	530	42	124	344	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	14	14	11	11	12	11	11	12	12	12	12
Grade (%)		0%			-3%			-6%			-5%	
Storage Length (ft)	0		0	0		0	40		80	0		85
Storage Lanes	1		0	0		1	1		0	1		1
Taper Length (ft)	25			25			50			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99			0.99			1.00		1.00		
Frt		0.933				0.850		0.989				0.850
Flt Protected		0.950			0.966		0.950			0.950		
Satd. Flow (prot)	1472	1536	0	0	1560	1475	1348	1666	0	1632	1685	1433
Flt Permitted		0.731			0.740		0.526			0.357		
Satd. Flow (perm)	1133	1536	0	0	1184	1475	746	1666	0	613	1685	1433
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		52				45		8				68
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		138			151			350			1530	
Travel Time (s)		3.1			3.4			8.0			34.8	
Confl. Peds. (#/hr)			17	17					3	3		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	14%	9%	10%	0%	13%	0%	20%	1%	0%	2%	4%	4%
Adj. Flow (vph)	35	89	71	28	12	45	59	576	46	135	374	68
Shared Lane Traffic (%)												
Lane Group Flow (vph)	35	160	0	0	40	45	59	622	0	135	374	68
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(ft)		13			13				12			23
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.10	1.05	1.05	1.17	1.17	1.12	1.15	1.15	1.10	1.11	1.11	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

## Lanes, Volumes, Timings

2020 Buildout (Dbl Ln &amp; MOD Jeff 2SBT &amp; Rt in) AM

6: Jefferson St &amp; Weller Ave/Flannagan Dr

3/27/2015



Lane Group	FBL	EPT	EBR	WPL	WPT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8	8	8	2			6		6
Detector Phase	4	4		8	8	8	2	2		6	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	12.0	12.0		12.0	12.0	12.0
Minimum Split (s)	31.0	31.0		22.0	22.0	22.0	22.0	22.0		34.0	34.0	34.0
Total Split (s)	31.0	31.0		31.0	31.0	31.0	49.0	49.0		49.0	49.0	49.0
Total Split (%)	38.8%	38.8%		38.8%	38.8%	38.8%	61.3%	61.3%		61.3%	61.3%	61.3%
Maximum Green (s)	25.0	25.0		25.0	25.0	25.0	43.0	43.0		43.0	43.0	43.0
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	4.5	4.5		4.5	4.5	4.5	6.0	6.0		6.0	6.0	6.0
Recall Mode	None	None		None	None	None	C-Min	C-Min		C-Min	C-Min	C-Min
Walk Time (s)	7.0	7.0								7.0	7.0	7.0
Flash Dont Walk (s)	18.0	18.0								21.0	21.0	21.0
Pedestrian Calls (#/hr)	17	17								3	3	3
Act Effct Green (s)	15.9	15.9		15.9	15.9	52.1	52.1	52.1		52.1	52.1	52.1
Actuated g/C Ratio	0.20	0.20		0.20	0.20	0.65	0.65	0.65		0.65	0.65	0.65
v/c Ratio	0.15	0.46		0.17	0.14	0.12	0.57	0.34		0.34	0.34	0.07
Control Delay	24.1	21.0		24.5	7.6	7.7	10.4			5.4	3.2	0.2
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0			0.0	0.0	0.0
Total Delay	24.1	21.0		24.5	7.6	7.7	10.4			5.4	3.2	0.2
LOS	C	C		C	A	A	B			A	A	A
Approach Delay		21.6			15.5			10.2			3.3	
Approach LOS		C		B			B				A	

**Intersection Summary**

Area Type: CBD

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 44 (55%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.57

Intersection Signal Delay: 9.4

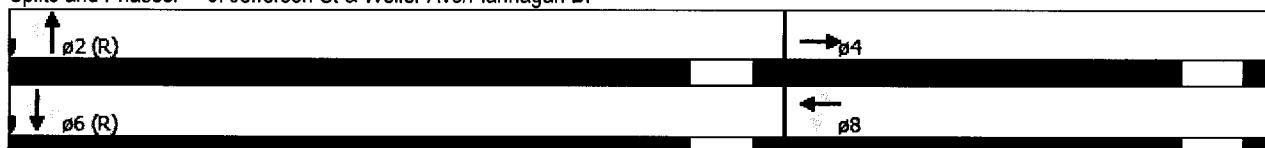
Intersection LOS: A

Intersection Capacity Utilization 83.5%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 6: Jefferson St &amp; Weller Ave/Flannagan Dr



Baseline

thl/msa

Synchro 8 Report

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HCM 2010 Signalized Intersection Summary 2020 Buildout (Dbl Ln & MOD Jeff 2SBT & Rt in) AM  
6: Jefferson St & Weller Ave/Flannagan Dr

3/27/2015

Movement	EGL	EBT	EGR	WGL	WBT	WGR	NGL	NBT	NGR	SGL	SBT	SBR
Lane Configurations	↑ ↗	↑ ↘	↗ ↙	↖ ↖	↖ ↗	↖ ↘	↑ ↗	↑ ↘	↗ ↖	↑ ↗	↑ ↘	↖ ↗
Volume (veh/h)	32	82	65	26	11	41	54	530	42	124	344	63
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.97		0.98	0.99		0.96	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/in	1560	1625	1778	1736	1671	1736	1468	1745	1761	1718	1685	1685
Adj Flow Rate, veh/h	35	89	71	28	12	45	59	576	46	135	374	68
Adj No. of Lanes	1	1	0	0	1	1	1	1	0	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	14	9	9	13	13	0	20	1	1	2	4	4
Cap, veh/h	218	186	149	188	66	319	554	997	80	550	1053	894
Arrive On Green	0.22	0.22	0.22	0.22	0.22	0.22	1.00	1.00	1.00	1.00	1.00	1.00
Sat Flow, veh/h	1093	829	661	495	292	1420	743	1595	127	736	1685	1430
Grp Volume(v), veh/h	35	0	160	40	0	45	59	0	622	135	374	68
Grp Sat Flow(s), veh/h/in	1093	0	1490	787	0	1420	743	0	1722	736	1685	1430
Q Serve(g_s), s	2.3	0.0	7.5	1.2	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	10.9	0.0	7.5	8.6	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		0.44	0.70		1.00	1.00		0.07	1.00		1.00
Lane Grp Cap(c), veh/h	218	0	335	253	0	319	554	0	1077	550	1053	894
V/C Ratio(X)	0.16	0.00	0.48	0.16	0.00	0.14	0.11	0.00	0.58	0.25	0.36	0.08
Avail Cap(c_a), veh/h	314	0	466	359	0	444	554	0	1077	550	1053	894
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.89	0.89	0.89
Uniform Delay (d), s/veh	32.2	0.0	26.9	27.3	0.0	24.8	0.0	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.6	0.0	1.8	0.5	0.0	0.3	0.4	0.0	2.3	0.9	0.8	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/in	0.7	0.0	3.2	0.8	0.0	0.8	0.1	0.0	0.7	0.1	0.2	0.0
LnGrp Delay(d), s/veh	32.8	0.0	28.7	27.7	0.0	25.2	0.4	0.0	2.3	0.9	0.8	0.1
LnGrp LOS	C	C	C	C	A	C	A	A	A	A	A	A
Approach Vol, veh/h		195			85			681			577	
Approach Delay, s/veh		29.5			26.4			2.1			0.8	
Approach LOS		C			C			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	56.0		24.0		56.0		24.0					
Change Period (Y+Rc), s	6.0		6.0		6.0		6.0					
Max Green Setting (Gmax), s	43.0		25.0		43.0		25.0					
Max Q Clear Time (g_c+l1), s	2.0		12.9		2.0		10.6					
Green Ext Time (p_c), s	26.3		1.8		26.3		2.0					
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			6.4									
HCM 2010 LOS			A									

Approach	EB	NB	NB	SB
Crosswalk Length (ft)	56.7	45.4	45.1	58.4
Crosswalk Width (ft)	12.0	12.0	12.0	12.0
Total Number of Lanes Crossed	4	3	4	4
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	6	2	4	8
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (mph)	30	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-	-
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-	-
Pedestrian Delay (s/p)	40.0	40.0	40.0	40.0
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.22	2.06	2.42	2.44
Pedestrian Crosswalk LOS	B	B	B	B

Two Way Analysis cannot be performed on Signalized Intersection.

Lanes, Volumes, Timings  
7: Evans Mill Rd & Weller Ave

2020 Buildout (Dbl Ln & MOD Jeff 2SBT & Rt in) AM

3/27/2015



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↑	↑	↑↓		↓	↓↑
Volume (vph)	86	41	179	92	86	320
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	14	15	10	10	10	10
Lane Util. Factor	1.00	1.00	0.95	0.95	0.95	0.95
Fr <sub>t</sub>		0.850	0.949			
Flt Protected	0.950					0.990
Satd. Flow (prot)	1604	1537	2783	0	0	2930
Flt Permitted	0.950					0.990
Satd. Flow (perm)	1604	1537	2783	0	0	2930
Link Speed (mph)	30		30			30
Link Distance (ft)	138		244			240
Travel Time (s)	3.1		5.5			5.5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	8%	4%	0%	10%	8%	1%
Adj. Flow (vph)	93	45	195	100	93	348
Shared Lane Traffic (%)						
Lane Group Flow (vph)	93	45	295	0	0	441
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	14		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.05	1.01	1.25	1.25	1.25	1.25
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

**Intersection Summary**

Area Type: CBD

Control Type: Unsignalized

Intersection Capacity Utilization 36.7%

ICU Level of Service A

Analysis Period (min) 15

**Intersection**

Int Delay, s/veh 3.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	86	41	179	92	86	320
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	8	4	0	10	8	1
Mvmt Flow	93	45	195	100	93	348

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	606	147	0 0 295 0
Stage 1	245	-	- -
Stage 2	361	-	- -
Critical Hdwy	6.96	6.98	- - 4.26 -
Critical Hdwy Stg 1	5.96	-	- -
Critical Hdwy Stg 2	5.96	-	- -
Follow-up Hdwy	3.58	3.34	- - 2.28 -
Pot Cap-1 Maneuver	415	867	- - 1221 -
Stage 1	755	-	- -
Stage 2	658	-	- -
Platoon blocked, %		- -	- -
Mov Cap-1 Maneuver	376	867	- - 1221 -
Mov Cap-2 Maneuver	376	-	- -
Stage 1	755	-	- -
Stage 2	596	-	- -

Approach	WB	NB	SB
HCM Control Delay, s	15	0	2
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	376	867	1221	-
HCM Lane V/C Ratio	-	-	0.249	0.051	0.077	-
HCM Control Delay (s)	-	-	17.7	9.4	8.2	0.3
HCM Lane LOS	-	-	C	A	A	A
HCM 95th %tile Q(veh)	-	-	1	0.2	0.2	-

Lanes, Volumes, Timings  
11: Jefferson St & Site Entr

2020 Buildout (Dbl Ln & MOD Jeff 2SBT & Rt in) AM  
3/27/2015



Lane Group	WBT	NBT	SBD	EBT		
Lane Configurations						
Volume (vph)	67	158	467	161	251	184
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	11	11	11	11
Grade (%)	0%		-6%			4%
Storage Length (ft)	0	0		0	170	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				50	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.95
Ped Bike Factor						
Frt		0.850	0.965			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1593	1425	1611	0	1509	3018
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1593	1425	1611	0	1509	3018
Link Speed (mph)	30		30			30
Link Distance (ft)	303		394			350
Travel Time (s)	6.9		9.0			8.0
Confl. Peds. (#/hr)	50			20	20	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	73	172	508	175	273	200
Shared Lane Traffic (%)						
Lane Group Flow (vph)	73	172	683	0	273	200
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		11			11
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.14	1.14	1.15	1.15	1.22	1.22
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary

Area Type: CBD

Control Type: Unsignalized

Intersection Capacity Utilization 68.3%

ICU Level of Service C

Analysis Period (min) 15

**Intersection**

Int Delay, s/veh 9.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	67	158	467	161	251	184
Conflicting Peds, #/hr	50	0	0	20	20	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	170	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	-6	-	-	4
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	73	172	508	175	273	200

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	1291	665	0 0 733 0
Stage 1	645	-	- - - -
Stage 2	646	-	- - - -
Critical Hdwy	6.63	6.23	- - 4.12 -
Critical Hdwy Stg 1	5.43	-	- - - -
Critical Hdwy Stg 2	5.83	-	- - - -
Follow-up Hdwy	3.519	3.319	- - 2.218 -
Pot Cap-1 Maneuver	167	459	- - 872 -
Stage 1	521	-	- - - -
Stage 2	485	-	- - - -
Platoon blocked, %		-	- - - -
Mov Cap-1 Maneuver	108	433	- - 859 -
Mov Cap-2 Maneuver	108	-	- - - -
Stage 1	499	-	- - - -
Stage 2	326	-	- - - -

Approach	WB	NB	SB
HCM Control Delay, s	39.8	0	6.4
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	108	433	859	-
HCM Lane V/C Ratio	-	-	0.674	0.397	0.318	-
HCM Control Delay (s)	-	-	89.5	18.7	11.1	-
HCM Lane LOS	-	-	F	C	B	-
HCM 95th %tile Q(veh)	-	-	3.5	1.9	1.4	-

Lanes, Volumes, Timings  
14: Jefferson St & Reserve Ave

2020 Buildout (Dbl Ln & MOD Jeff 2SBT & Rt in) AM

3/27/2015

Lane Group	EBL	EBT	EBC	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	221	32	51	0	32	126	53	497	5	65	480	173
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	15	15	12	12	12	11	11	11	11	11	15
Grade (%)		0%			0%			-5%			0%	
Storage Length (ft)	0		0	100		0	100		0	220		80
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	25			100			150			180		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00
Frt		0.908			0.881			0.999				0.850
Flt Protected	0.950						0.950			0.950		
Satd. Flow (prot)	1593	1674	0	1676	1477	0	1578	1659	0	1540	3079	1568
Flt Permitted	0.638						0.344			0.396		
Satd. Flow (perm)	1070	1674	0	1676	1477	0	571	1659	0	642	3079	1568
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)	55			137				1				205
Link Speed (mph)	30			30			30				30	
Link Distance (ft)	551			718			1530				504	
Travel Time (s)	12.5			16.3			34.8				11.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	240	35	55	0	35	137	58	540	5	71	522	188
Shared Lane Traffic (%)												
Lane Group Flow (vph)	240	90	0	0	172	0	58	545	0	71	522	188
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(ft)	12			12			11				11	
Link Offset(ft)	0			0			0				0	
Crosswalk Width(ft)	16			16			16				16	
Two way Left Turn Lane												
Headway Factor	1.14	1.01	1.01	1.14	1.14	1.14	1.16	1.16	1.16	1.19	1.19	1.01
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100		20	100	20
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)	94			94			94			94		
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	

Lanes, Volumes, Timings  
14: Jefferson St & Reserve Ave

2020 Buildout (Dbl Ln & MOD Jeff 2SBT & Rt in) AM

3/27/2015

Lane Group	EPL	EBT	EBR	WBL	WBT	WER	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4			8			2			6		6
Detector Phase	4	4		8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		4.0	30.0		4.0	30.0	30.0
Minimum Split (s)	22.0	22.0		22.0	22.0		18.0	36.0		10.0	36.0	36.0
Total Split (s)	26.0	26.0		26.0	26.0		18.0	44.0		10.0	36.0	36.0
Total Split (%)	32.5%	32.5%		32.5%	32.5%		22.5%	55.0%		12.5%	45.0%	45.0%
Maximum Green (s)	20.0	20.0		20.0	20.0		12.0	38.0		4.0	30.0	30.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Lead/Lag							Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		0.2	6.0		0.2	6.0	6.0
Recall Mode	Max	Max		Max	Max		Max	C-Min		Max	C-Min	C-Min
Walk Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	5.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0			11.0			11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0			0			0	0
Act Effct Green (s)	20.0	20.0			20.0		48.0	38.0		34.0	30.0	30.0
Actuated g/C Ratio	0.25	0.25			0.25		0.60	0.48		0.42	0.38	0.38
v/c Ratio	0.90	0.20			0.36		0.12	0.69		0.22	0.45	0.26
Control Delay	66.5	12.7			9.7		4.4	17.6		10.0	20.4	3.2
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	66.5	12.7			9.7		4.4	17.6		10.0	20.4	3.2
LOS	E	B		A			A	B		A	C	A
Approach Delay		51.8			9.7			16.3			15.3	
Approach LOS		D		A				B			B	

**Intersection Summary**

Area Type: CBD

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 8 (10%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 21.5

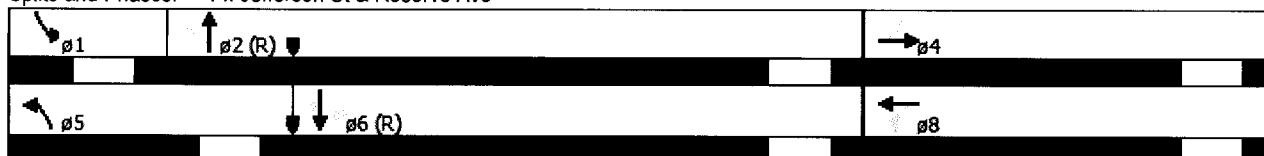
Intersection LOS: C

Intersection Capacity Utilization 77.5%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 14: Jefferson St & Reserve Ave



HCM 2010 Signalized Intersection Summary 2020 Buildout (Dbl Ln & MOD Jeff 2SBT & Rt in) AM  
 14: Jefferson St & Reserve Ave

3/27/2015

Movement	EBl	EBT	EBr	WBl	WT	WBr	NBl	NBT	NBr	SBl	SBT	SBr
Lane Configurations	↑	↓		↑	↓		↑	↓		↑	↑↓	↑
Volume (veh/h)	221	32	51	0	32	126	53	497	5	65	480	173
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1676	1744	1778	1676	1676	1710	1718	1718	1753	1676	1676	1744
Adj Flow Rate, veh/h	240	35	55	0	35	137	58	540	5	71	522	0
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	254	153	240	90	75	293	540	807	7	380	1194	556
Arrive On Green	0.25	0.25	0.25	0.00	0.25	0.25	0.20	0.63	0.63	0.05	0.38	0.00
Sat Flow, veh/h	1087	612	962	1171	299	1171	1637	1700	16	1597	3185	1482
Grp Volume(v), veh/h	240	0	90	0	0	172	58	0	545	71	522	0
Grp Sat Flow(s),veh/h/ln	1087	0	1574	1171	0	1470	1637	0	1716	1597	1593	1482
Q Serve(g_s), s	12.0	0.0	3.6	0.0	0.0	8.0	1.3	0.0	16.2	2.1	9.8	0.0
Cycle Q Clear(g_c), s	20.0	0.0	3.6	0.0	0.0	8.0	1.3	0.0	16.2	2.1	9.8	0.0
Prop In Lane	1.00		0.61	1.00		0.80	1.00		0.01	1.00		1.00
Lane Grp Cap(c), veh/h	254	0	393	90	0	367	540	0	815	380	1194	556
V/C Ratio(X)	0.95	0.00	0.23	0.00	0.00	0.47	0.11	0.00	0.67	0.19	0.44	0.00
Avail Cap(c_a), veh/h	254	0	393	90	0	367	540	0	815	380	1194	556
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	0.00	0.00	1.00	0.84	0.00	0.84	1.00	1.00	0.00
Uniform Delay (d), s/veh	35.9	0.0	23.9	0.0	0.0	25.5	8.8	0.0	10.7	14.3	18.7	0.0
Incr Delay (d2), s/veh	44.1	0.0	1.4	0.0	0.0	4.2	0.3	0.0	3.7	1.1	1.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.4	0.0	1.7	0.0	0.0	3.6	0.6	0.0	8.3	1.0	4.5	0.0
LnGrp Delay(d),s/veh	80.0	0.0	25.2	0.0	0.0	29.7	9.1	0.0	14.4	15.4	19.9	0.0
LnGrp LOS	E		C			C	A		B	B	B	
Approach Vol, veh/h		330			172			603			593	
Approach Delay, s/veh		65.1			29.7			13.9			19.3	
Approach LOS		E			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.0	44.0		26.0	18.0	36.0		26.0
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0		6.0	
Max Green Setting (Gmax), s	4.0	38.0		20.0	12.0	30.0		20.0
Max Q Clear Time (g_c+l1), s	4.1	18.2		22.0	3.3	11.8		10.0
Green Ext Time (p_c), s	0.0	13.6		0.0	0.0	12.8		1.9

Intersection Summary		
HCM 2010 Ctrl Delay	27.3	
HCM 2010 LOS	C	

Approach	EB	NB	NB	SB
Crosswalk Length (ft)	39.0	36.5	46.2	45.1
Crosswalk Width (ft)	12.0	12.0	12.0	12.0
Total Number of Lanes Crossed	3	3	4	4
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	6	2	4	8
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (mph)	30	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-	-
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-	-
Pedestrian Delay (s/p)	40.0	40.0	40.0	40.0
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.14	2.04	2.42	2.55
Pedestrian Crosswalk LOS	B	B	B	B

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Two Way Analysis cannot be performed on Signalized Intersection.

## Lanes, Volumes, Timings

## 2020 Buildout (Dbl Ln &amp; MOD Jeff FULL 2SBT &amp; Rt in) PM

3: Jefferson/Jefferson St &amp; McClanahan St/Yellow Mountain Rd

3/27/2015

Lane Group	EBL	ERT	ERR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	212	158	21	5	63	32	63	96	5	128	206	273
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	10	10	10	12	16	12	11	11	10
Grade (%)		2%			-6%			-4%			4%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99			1.00	0.97		0.99			0.99	0.94
Frt		0.993				0.850		0.996				0.850
Flt Protected		0.974			0.997			0.981			0.981	
Satd. Flow (prot)	0	1641	0	0	1639	1397	0	1683	0	0	1579	1291
Flt Permitted		0.792			0.972			0.768			0.810	
Satd. Flow (perm)	0	1325	0	0	1597	1350	0	1307	0	0	1293	1214
Right Turn on Red			No			Yes			Yes			Yes
Satd. Flow (RTOR)					41			2				297
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		368			600			400			394	
Travel Time (s)		8.4			13.6			9.1			9.0	
Confl. Peds. (#/hr)	9		7	7		9	25		19	19		25
Confl. Bikes (#/hr)								1				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	0%	0%	0%	0%	0%	2%	4%	0%	0%	1%	3%
Parking (#/hr)	0	0	0				0	0	0			
Adj. Flow (vph)	230	172	23	5	68	35	68	104	5	139	224	297
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	425	0	0	73	35	0	177	0	0	363	297
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.16	1.13	1.16	1.20	1.20	1.20	1.12	1.09	1.12	1.22	1.22	1.28
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

## Lanes, Volumes, Timings

2020 Buildout (Dbl Ln &amp; MOD Jeff FULL 2SBT &amp; Rt in) PM

3: Jefferson/Jefferson St &amp; McClanahan St/Yellow Mountain Rd

3/27/2015



Lane Group	EPL	EST	EER	WPL	WET	WRE	WRG	NRG	NBT	NRB	SPL	ST	SR
Tum Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	6	Perm
Protected Phases			4					8			2		
Permitted Phases		4				8		8	2		6		6
Detector Phase		4	4		8	8	8	2	2		6	6	6
Switch Phase													
Minimum Initial (s)	12.0	12.0		12.0	12.0	12.0	12.0	12.0		12.0	12.0	12.0	
Minimum Split (s)	31.0	31.0		31.0	31.0	31.0	31.0	31.0		31.0	31.0	31.0	
Total Split (s)	40.0	40.0		40.0	40.0	40.0	40.0	40.0		40.0	40.0	40.0	
Total Split (%)	50.0%	50.0%		50.0%	50.0%	50.0%	50.0%	50.0%		50.0%	50.0%	50.0%	
Maximum Green (s)	34.0	34.0		34.0	34.0	34.0	34.0	34.0		34.0	34.0	34.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	
Lost Time Adjust (s)	0.0			0.0	0.0			0.0			0.0	0.0	
Total Lost Time (s)	6.0			6.0	6.0			6.0			6.0	6.0	
Lead/Lag													
Lead-Lag Optimize?													
Vehicle Extension (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5	
Recall Mode	None	None		None	None	None	C-Min	C-Min		C-Min	C-Min	C-Min	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0	
Flash Dont Walk (s)	18.0	18.0		18.0	18.0	18.0	18.0	18.0		18.0	18.0	18.0	
Pedestrian Calls (#/hr)	16	16		16	16	44	44	44		44	44	44	
Act Effct Green (s)	30.3			30.3	30.3			37.7			37.7	37.7	
Actuated g/C Ratio	0.38			0.38	0.38			0.47			0.47	0.47	
v/c Ratio	0.85			0.12	0.07			0.29			0.60	0.41	
Control Delay	39.1			15.1	4.5			15.7			17.1	2.8	
Queue Delay	0.0			0.0	0.0			0.0			0.0	0.0	
Total Delay	39.1			15.1	4.5			15.7			17.1	2.8	
LOS	D			B	A			B			B	A	
Approach Delay	39.1			11.7				15.7			10.7		
Approach LOS	D			B				B			B		

**Intersection Summary**

Area Type: CBD

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 55 (69%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 20.2

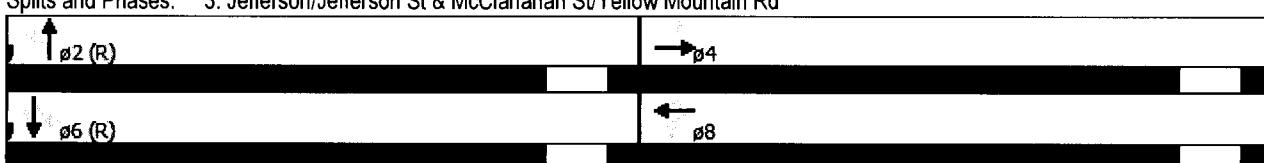
Intersection LOS: C

Intersection Capacity Utilization 87.1%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 3: Jefferson/Jefferson St &amp; McClanahan St/Yellow Mountain Rd



Baseline

thl/msa

Synchro 8 Report

Page 2

HCM 2010 Signalized Intersection S202015 Yieldout (Dbl Ln & MOD Jeff FULL 2SBT & Rt in) PM  
 3: Jefferson/Jefferson St & McClanahan St/Yellow Mountain Rd  
 3/27/2015

Movement	EBL	EBT	EBC	WBL	WBT	WBC	NBL	NBT	NBC	SBL	SBT	SBC
Lane Configurations		↖	↗	↙	↖	↗	↖	↗	↖	↙	↖	↗
Volume (veh/h)	212	158	21	5	63	32	63	96	5	128	206	273
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Q <sub>b</sub> ), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	1.00		0.99	0.99		0.95	0.99		0.97
Parking Bus, Adj	1.00	1.00	0.90	1.00	1.00	1.00	1.00	1.00	0.90	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1693	1732	1693	1761	1761	1761	1744	1759	1744	1676	1666	1627
Adj Flow Rate, veh/h	230	172	23	5	68	35	68	104	5	139	224	297
Adj No. of Lanes	0	1	0	0	1	1	0	1	0	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	0	0	0	0	0	4	4	4	1	1	3
Cap, veh/h	313	197	25	67	657	577	210	287	13	280	416	619
Arrive On Green	0.39	0.39	0.39	0.39	0.39	0.39	0.46	0.46	0.46	0.77	0.77	0.77
Sat Flow, veh/h	624	506	65	48	1685	1480	321	623	27	474	903	1345
Grp Volume(v), veh/h	425	0	0	73	0	35	177	0	0	363	0	297
Grp Sat Flow(s), veh/h/ln	1194	0	0	1733	0	1480	971	0	0	1377	0	1345
Q Serve(g_s), s	25.1	0.0	0.0	0.0	0.0	1.2	4.5	0.0	0.0	0.0	0.0	6.5
Cycle Q Clear(g_c), s	27.2	0.0	0.0	2.1	0.0	1.2	13.3	0.0	0.0	8.8	0.0	6.5
Prop In Lane	0.54		0.05	0.07		1.00	0.38		0.03	0.38		1.00
Lane Grp Cap(c), veh/h	535	0	0	724	0	577	509	0	0	696	0	619
V/C Ratio(X)	0.79	0.00	0.00	0.10	0.00	0.06	0.35	0.00	0.00	0.52	0.00	0.48
Avail Cap(c_a), veh/h	578	0	0	783	0	629	509	0	0	696	0	619
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.67	1.67	1.67
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.7	0.0	0.0	15.5	0.0	15.3	15.0	0.0	0.0	5.9	0.0	5.7
Incr Delay (d2), s/veh	8.0	0.0	0.0	0.1	0.0	0.1	1.9	0.0	0.0	2.8	0.0	2.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%), veh/ln	10.0	0.0	0.0	1.0	0.0	0.5	3.0	0.0	0.0	3.6	0.0	2.8
LnGrp Delay(d), s/veh	31.6	0.0	0.0	15.6	0.0	15.3	16.8	0.0	0.0	8.7	0.0	8.4
LnGrp LOS	C		B		B	B			A		A	
Approach Vol, veh/h	425				108				177			660
Approach Delay, s/veh	31.6				15.5				16.8			8.5
Approach LOS	C		B				B		B		A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6			8				
Phs Duration (G+Y+Rc), s	42.8		37.2		42.8			37.2				
Change Period (Y+Rc), s	6.0		6.0		6.0			6.0				
Max Green Setting (Gmax), s	34.0		34.0		34.0			34.0				
Max Q Clear Time (g_c+l1), s	15.3		29.2		10.8			4.1				
Green Ext Time (p_c), s	7.4		2.0		8.2			6.1				
Intersection Summary												
HCM 2010 Ctrl Delay			17.3									
HCM 2010 LOS			B									

<b>Approach</b>	<b>EB</b>	<b>WB</b>	<b>NB</b>	<b>SB</b>
Crosswalk Length (ft)	29.6	32.4	28.2	33.7
Crosswalk Width (ft)	12.0	12.0	12.0	12.0
Total Number of Lanes Crossed	2	3	2	3
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	6	2	4	8
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (mph)	30	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-	-
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-	-
Pedestrian Delay (s/p)	40.0	40.0	40.0	40.0
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.14	2.08	1.93	2.28
Pedestrian Crosswalk LOS	B	B	A	B

HCM 2010 TWSC

2020 Buildout (Dbl Ln & MOD Jeff FULL 2SBT & Rt in) PM  
3: Jefferson/Jefferson St & McClanahan St/Yellow Mountain Rd

3/27/2015

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Two Way Analysis cannot be performed on Signalized Intersection.

## Lanes, Volumes, Timings

## 2020 Buildout (Dbl Ln &amp; MOD Jeff FULL 2SBT &amp; Rt in) PM

6: Jefferson St &amp; Weller Ave/Flannagan Dr

3/27/2015

	EBL	EFT	EBR	WEL	WBT	WFR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	47	67	117	41	9	47	39	336	26	61	457	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	14	14	11	11	12	11	11	12	12	12	12
Grade (%)		0%			-3%			-6%			-5%	
Storage Length (ft)	0		0	0		0	40		80	0		85
Storage Lanes	1		0	0		1	1		0	1		1
Taper Length (ft)	25			25			50			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99				1.00		1.00	1.00		1.00		0.99
Frt	0.905					0.850		0.989				0.850
Flt Protected	0.950				0.961		0.950			0.950		
Satd. Flow (prot)	1554	1584	0	0	1561	1341	1617	1631	0	1665	1718	1461
Flt Permitted	0.721				0.523		0.450			0.520		
Satd. Flow (perm)	1180	1584	0	0	848	1341	766	1631	0	911	1718	1441
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		116				51			7			53
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		138			151			350			1530	
Travel Time (s)		3.1			3.4			8.0			34.8	
Confl. Peds. (#/hr)			4	4			2		1	1		2
Confl. Bikes (#/hr)									1			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	8%	0%	5%	4%	0%	10%	0%	3%	4%	0%	2%	2%
Adj. Flow (vph)	51	73	127	45	10	51	42	365	28	66	497	63
Shared Lane Traffic (%)												
Lane Group Flow (vph)	51	200	0	0	55	51	42	393	0	66	497	63
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(ft)		13			13			12			23	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.10	1.05	1.05	1.17	1.17	1.12	1.15	1.15	1.10	1.11	1.11	1.11
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	

Lanes, Volumes, Timings

2020 Buildout (Dbl Ln &amp; MOD Jeff FULL 2SBT &amp; Rt in) PM

6: Jefferson St &amp; Weller Ave/Flannagan Dr

3/27/2015



Lane Group	EBL	EBT	EBC	WBL	WBT	WBC	NBL	NBT	NGR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases		4			8		8	2			6	
Permitted Phases	4			8	8	8	2	2		6		6
Detector Phase	4	4		8	8	8	2	2		6	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	12.0	12.0		12.0	12.0	12.0
Minimum Split (s)	31.0	31.0		31.0	31.0	31.0	31.0	31.0		34.0	34.0	34.0
Total Split (s)	32.0	32.0		32.0	32.0	32.0	48.0	48.0		48.0	48.0	48.0
Total Split (%)	40.0%	40.0%		40.0%	40.0%	40.0%	60.0%	60.0%		60.0%	60.0%	60.0%
Maximum Green (s)	26.0	26.0		26.0	26.0	26.0	42.0	42.0		42.0	42.0	42.0
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0			6.0	6.0	6.0	6.0		6.0	6.0	6.0
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	4.5	4.5		4.5	4.5	4.5	6.0	6.0		6.0	6.0	6.0
Recall Mode	None	None		None	None	None	C-Min	C-Min		C-Min	C-Min	C-Min
Walk Time (s)	7.0	7.0								7.0	7.0	7.0
Flash Dont Walk (s)	18.0	18.0								21.0	21.0	21.0
Pedestrian Calls (#/hr)	4	4								3	3	3
Act Effct Green (s)	13.2	13.2		13.2	13.2	54.8	54.8	54.8		54.8	54.8	54.8
Actuated g/C Ratio	0.16	0.16		0.16	0.16	0.68	0.68	0.68		0.68	0.68	0.68
v/c Ratio	0.26	0.56		0.39	0.19	0.08	0.35	0.11		0.42	0.06	
Control Delay	29.5	18.4		35.3	8.8	5.9	6.4	1.8		5.9	0.5	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	29.5	18.4		35.3	8.8	5.9	6.4	1.8		5.9	0.5	
LOS	C	B		D	A	A	A	A		A	A	A
Approach Delay		20.7			22.6			6.3			4.9	
Approach LOS		C			C			A			A	

**Intersection Summary**

Area Type: CBD

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 32 (40%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.56

Intersection Signal Delay: 9.4

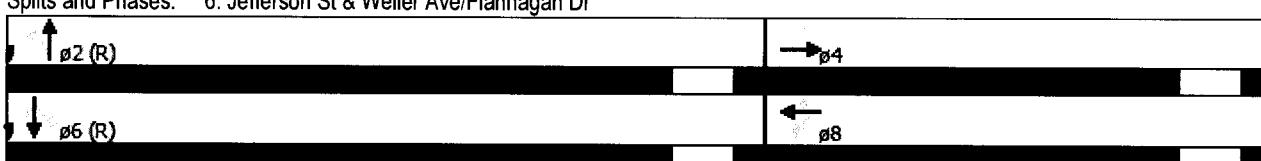
Intersection LOS: A

Intersection Capacity Utilization 75.0%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 6: Jefferson St &amp; Weller Ave/Flannagan Dr



HCM 2010 Signalized Intersection S2020 Bayldout (Dbl Ln & MOD Jeff FULL 2SBT & Rt in) PM  
6: Jefferson St & Weller Ave/Flannagan Dr  
3/27/2015

Movement	EBL	EBT	EPR	WBL	WBT	WPR	NBL	NBT	NPR	SBL	SBT	SBR
Lane Configurations	↑	↓		↑	↓		↑	↓		↑	↓	
Volume (veh/h)	47	67	117	41	9	47	39	336	26	61	457	58
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		1.00	1.00		0.99	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1647	1724	1778	1736	1681	1578	1761	1709	1761	1753	1718	1718
Adj Flow Rate, veh/h	51	73	127	45	10	51	42	365	28	66	497	63
Adj No. of Lanes	1	1	0	0	1	1	1	1	0	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	8	0	0	0	0	10	0	3	3	0	2	2
Cap, veh/h	203	138	239	204	37	325	370	948	73	652	1041	884
Arrive On Green	0.24	0.24	0.24	0.24	0.24	0.24	1.00	1.00	1.00	0.20	0.20	0.20
Sat Flow, veh/h	1175	564	981	502	150	1330	800	1564	120	928	1718	1459
Grp Volume(v), veh/h	51	0	200	55	0	51	42	0	393	66	497	63
Grp Sat Flow(s),veh/h/ln	1175	0	1545	651	0	1330	800	0	1684	928	1718	1459
Q Serve(g_s), s	3.3	0.0	9.0	2.8	0.0	2.4	1.9	0.0	0.0	4.7	20.5	2.8
Cycle Q Clear(g_c), s	15.1	0.0	9.0	11.8	0.0	2.4	22.4	0.0	0.0	4.7	20.5	2.8
Prop In Lane	1.00		0.63	0.82		1.00	1.00		0.07	1.00		1.00
Lane Grp Cap(c), veh/h	203	0	377	241	0	325	370	0	1021	652	1041	884
V/C Ratio(X)	0.25	0.00	0.53	0.23	0.00	0.16	0.11	0.00	0.39	0.10	0.48	0.07
Avail Cap(c_a), veh/h	298	0	502	333	0	432	370	0	1021	652	1041	884
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	0.33	0.33	0.33
Upstream Filter(l)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	0.87	0.87	0.87
Uniform Delay (d), s/veh	34.1	0.0	26.3	29.7	0.0	23.8	4.7	0.0	0.0	14.5	20.8	13.7
Incr Delay (d2), s/veh	1.1	0.0	2.0	0.8	0.0	0.4	0.6	0.0	1.1	0.3	1.4	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	4.0	1.2	0.0	0.9	0.5	0.0	0.3	1.3	10.2	1.2
LnGrp Delay(d),s/veh	35.2	0.0	28.2	30.5	0.0	24.2	5.4	0.0	1.1	14.8	22.2	13.9
LnGrp LOS	D	C	C		C	A			A	B	C	B
Approach Vol, veh/h	251			106			435			626		
Approach Delay, s/veh	29.7			27.4			1.5			20.5		
Approach LOS	C			C			A			C		
Time	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	54.5		25.5		54.5		25.5					
Change Period (Y+Rc), s	6.0		6.0		6.0		6.0					
Max Green Setting (Gmax), s	42.0		26.0		42.0		26.0					
Max Q Clear Time (g_c+l1), s	24.4		17.1		22.5		13.8					
Green Ext Time (p_c), s	12.1		1.9		13.1		2.4					
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			16.8									
HCM 2010 LOS			B									

HCM 2010 Signals-Pedestrians      2020 Buildout (Dbl Ln & MOD Jeff FULL 2SBT & Rt in) PM  
6: Jefferson St & Weller Ave/Flannagan Dr      3/27/2015

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<b>Approach</b>	<b>EB</b>	<b>WB</b>	<b>NB</b>	<b>SB</b>
Crosswalk Length (ft)	56.7	45.4	45.1	58.4
Crosswalk Width (ft)	12.0	12.0	12.0	12.0
Total Number of Lanes Crossed	4	3	4	4
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	6	2	4	8
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (mph)	30	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-	-
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-	-
Pedestrian Delay (s/p)	40.0	40.0	40.0	40.0
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.23	2.03	2.41	2.40
Pedestrian Crosswalk LOS	B	B	B	B

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Two Way Analysis cannot be performed on Signalized Intersection.



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙	↗	↑↗	↖	↘	↖↗
Volume (vph)	72	35	152	97	135	383
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	14	15	10	10	10	10
Lane Util. Factor	1.00	1.00	0.95	0.95	0.95	0.95
Ped Bike Factor						
Fr1		0.850	0.942			
Flt Protected	0.950					0.987
Satd. Flow (prot)	1699	1599	2760	0	0	2977
Flt Permitted	0.950					0.987
Satd. Flow (perm)	1699	1599	2760	0	0	2977
Link Speed (mph)	30		30			30
Link Distance (ft)	138		244			240
Travel Time (s)	3.1		5.5			5.5
Confl. Peds. (#/hr)				2	2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	0%	9%	2%	0%
Adj. Flow (vph)	78	38	165	105	147	416
Shared Lane Traffic (%)						
Lane Group Flow (vph)	78	38	270	0	0	563
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	14		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.05	1.01	1.25	1.25	1.25	1.25
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

#### Intersection Summary

Area Type: CBD  
 Control Type: Unsignalized  
 Intersection Capacity Utilization 39.1%  
 Analysis Period (min) 15

ICU Level of Service A

**Intersection**

Int Delay, s/veh 3.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	72	35	152	97	135	383
Conflicting Peds, #/hr	0	0	0	2	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	0	0	9	2	0
Mvmt Flow	78	38	165	105	147	416

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	720	137	0 0 271 0
Stage 1	218	-	- - - -
Stage 2	502	-	- - - -
Critical Hdwy	6.84	6.9	- - 4.14 -
Critical Hdwy Stg 1	5.84	-	- - - -
Critical Hdwy Stg 2	5.84	-	- - - -
Follow-up Hdwy	3.52	3.3	- - 2.22 -
Pot Cap-1 Maneuver	363	893	- - 1289 -
Stage 1	797	-	- - - -
Stage 2	573	-	- - - -
Platoon blocked, %	-	-	- - - -
Mov Cap-1 Maneuver	308	892	- - 1287 -
Mov Cap-2 Maneuver	308	-	- - - -
Stage 1	797	-	- - - -
Stage 2	487	-	- - - -

Approach	WB	NB	SB
HCM Control Delay, s	16.9	0	2.4
HCM LOS	C	-	-

Minor Lane/Major Mvmt	NBT	NBR	WBL n1	WBL n2	SBL	SBT
Capacity (veh/h)	-	-	308	892	1287	-
HCM Lane V/C Ratio	-	-	0.254	0.043	0.114	-
HCM Control Delay (s)	-	-	20.6	9.2	8.2	0.4
HCM Lane LOS	-	-	C	A	A	A
HCM 95th %tile Q(veh)	-	-	1	0.1	0.4	-



Lane Group	WBL	WBR	NBT	NBR	SEL	SBT
Lane Configurations	1	1	1	1	1	1
Volume (vph)	192	128	274	66	201	415
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	11	11	11	11
Grade (%)	0%		-6%			4%
Storage Length (ft)	0	0		0	170	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				50	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.95
Ped Bike Factor						
Frt		0.850	0.974			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1593	1425	1626	0	1509	3018
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1593	1425	1626	0	1509	3018
Link Speed (mph)	30		30			30
Link Distance (ft)	342		394			350
Travel Time (s)	7.8		9.0			8.0
Confl. Peds. (#/hr)	50			20	20	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	209	139	298	72	218	451
Shared Lane Traffic (%)						
Lane Group Flow (vph)	209	139	370	0	218	451
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		11			11
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.14	1.14	1.15	1.15	1.22	1.22
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

#### Intersection Summary

Area Type: CBD

Control Type: Unsignalized

Intersection Capacity Utilization 55.0%

ICU Level of Service B

Analysis Period (min) 15

**Intersection**

Int Delay, s/veh 27.7

Movement	WB	NB	NBT	NBR	SBL	SBT
Vol, veh/h	192	128	274	66	201	415
Conflicting Peds, #/hr	50	0	0	20	20	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	170	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	-6	-	-	4
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	209	139	298	72	218	451

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	1047	404	0 0 420 0
Stage 1	384	-	- - - -
Stage 2	663	-	- - - -
Critical Hdwy	6.63	6.23	- - 4.12 -
Critical Hdwy Stg 1	5.43	-	- - - -
Critical Hdwy Stg 2	5.83	-	- - - -
Follow-up Hdwy	3.519	3.319	- - 2.218 -
Pot Cap-1 Maneuver	238	646	- - 1139 -
Stage 1	688	-	- - - -
Stage 2	475	-	- - - -
Platoon blocked, %		- -	- -
Mov Cap-1 Maneuver	~ 181	610	- - 1122 -
Mov Cap-2 Maneuver	~ 181	-	- - - -
Stage 1	659	-	- - - -
Stage 2	377	-	- - - -

Approach	WB	NB	SB
HCM Control Delay, s	105	0	2.9
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WB	LN1	WB	LN2	SBL	SBT
Capacity (veh/h)	-	-	181	610	1122	-	-	-
HCM Lane V/C Ratio	-	-	1.153	0.228	0.195	-	-	-
HCM Control Delay (s)	-	-	166.6	12.6	9	-	-	-
HCM Lane LOS	-	-	F	B	A	-	-	-
HCM 95th %tile Q(veh)	-	-	10.7	0.9	0.7	-	-	-

**Notes**

~- Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon

Lanes, Volumes, Timings  
14: Jefferson St & Reserve Ave

2020 Buildout (Dbl Ln & MOD Jeff FULL 2SBT & Rt in) PM

3/27/2015

Lane Group	SP1	EBT	EBR	WBL	WBT	WBFR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	194	26	53	5	37	184	11	382	5	34	517	284
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	15	15	12	12	12	11	11	11	11	11	15
Grade (%)			0%		0%			-5%			0%	
Storage Length (ft)	0		0	100		0	100		0	220		80
Storage Lanes	1		0	1		0	1		0	1		1
Taper Length (ft)	25			100			150			180		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00
Frt		0.899			0.875			0.998				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1593	1658	0	1593	1467	0	1578	1658	0	1540	3079	1568
Flt Permitted	0.511			0.701			0.321			0.517		
Satd. Flow (perm)	857	1658	0	1175	1467	0	533	1658	0	838	3079	1568
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		58			200			1				309
Link Speed (mph)		30			30			30				30
Link Distance (ft)		551			718			1530				504
Travel Time (s)		12.5			16.3			34.8				11.5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	211	28	58	5	40	200	12	415	5	37	562	309
Shared Lane Traffic (%)												
Lane Group Flow (vph)	211	86	0	5	240	0	12	420	0	37	562	309
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(ft)		12			12			11				11
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.14	1.01	1.01	1.14	1.14	1.14	1.16	1.16	1.16	1.19	1.19	1.01
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100		20	100	20
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94				94
Detector 2 Size(ft)		6			6			6				6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0		0.0		0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	

Lanes, Volumes, Timings  
14: Jefferson St & Reserve Ave

2020 Buildout (Dbl Ln & MOD Jeff FULL 2SBT & Rt in) PM

3/27/2015



Lane Group	EPL	EST	EBR	WPL	WBT	WBR	NPL	NBT	NBR	SPL	SBT	SBR
Permitted Phases	4			8			2			6		6
Detector Phase	4	4		8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		4.0	30.0		4.0	30.0	30.0
Minimum Split (s)	22.0	22.0		22.0	22.0		18.0	36.0		10.0	36.0	36.0
Total Split (s)	26.0	26.0		26.0	26.0		18.0	44.0		10.0	36.0	36.0
Total Split (%)	32.5%	32.5%		32.5%	32.5%		22.5%	55.0%		12.5%	45.0%	45.0%
Maximum Green (s)	20.0	20.0		20.0	20.0		12.0	38.0		4.0	30.0	30.0
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	6.0
Lead/Lag							Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		0.2	6.0		0.2	6.0	6.0
Recall Mode	Max	Max		Max	Max		Max	C-Min		Max	C-Min	C-Min
Walk Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	5.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0			11.0			11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0			0			0	0
Act Effct Green (s)	20.0	20.0		20.0	20.0		48.0	38.0		34.0	30.0	30.0
Actuated g/C Ratio	0.25	0.25		0.25	0.25		0.60	0.48		0.42	0.38	0.38
v/c Ratio	0.99	0.19		0.02	0.47		0.03	0.53		0.09	0.49	0.40
Control Delay	92.0	11.8		23.0	9.4		5.1	15.4		8.5	20.9	3.9
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	92.0	11.8		23.0	9.4		5.1	15.4		8.5	20.9	3.9
LOS	F	B		C	A		A	B		A	C	A
Approach Delay		68.8			9.7			15.1			14.6	
Approach LOS		E			A			B			B	

Intersection Summary

Area Type: CBD

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 71 (89%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.99

Intersection Signal Delay: 22.6

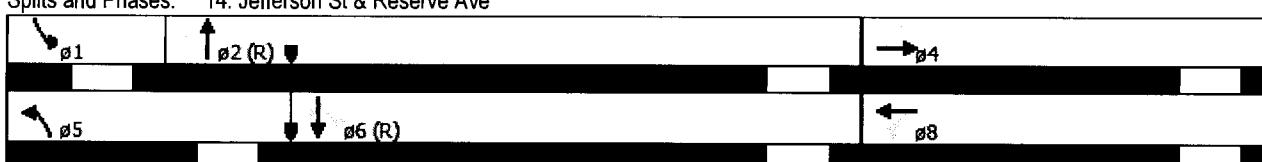
Intersection LOS: C

Intersection Capacity Utilization 73.1%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 14: Jefferson St & Reserve Ave



HCM 2010 Signalized Intersection Summary (Dbl Ln & MOD Jeff FULL 2SBT & Rt in) PM  
 14: Jefferson St & Reserve Ave 3/27/2015

Movement	EBL	EBT	EBC	WBL	WBT	WBC	NBL	NBT	NBC	SBL	SBT	SBC
Lane Configurations	↑ ↗	↑ ↘		↑ ↗	↑ ↘		↑ ↗	↑ ↘		↑ ↗	↑ ↘	
Volume (veh/h)	194	26	53	5	37	184	11	382	5	34	517	284
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1676	1744	1778	1676	1676	1710	1718	1718	1753	1676	1676	1744
Adj Flow Rate, veh/h	211	28	58	5	40	200	12	415	5	37	562	0
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	195	127	263	332	61	304	523	805	10	495	1194	556
Arrive On Green	0.25	0.25	0.25	0.25	0.25	0.25	0.30	0.95	0.95	0.05	0.38	0.00
Sat Flow, veh/h	1022	507	1051	1175	244	1218	1637	1694	20	1597	3185	1482
Grp Volume(v), veh/h	211	0	86	5	0	240	12	0	420	37	562	0
Grp Sat Flow(s),veh/h/ln	1022	0	1558	1175	0	1462	1637	0	1715	1597	1593	1482
Q Serve(g_s), s	8.2	0.0	3.5	0.3	0.0	11.8	0.2	0.0	1.9	1.1	10.7	0.0
Cycle Q Clear(g_c), s	20.0	0.0	3.5	3.8	0.0	11.8	0.2	0.0	1.9	1.1	10.7	0.0
Prop In Lane	1.00		0.67	1.00		0.83	1.00		0.01	1.00		1.00
Lane Grp Cap(c), veh/h	195	0	390	332	0	365	523	0	815	495	1194	556
V/C Ratio(X)	1.08	0.00	0.22	0.02	0.00	0.66	0.02	0.00	0.52	0.07	0.47	0.00
Avail Cap(c_a), veh/h	195	0	390	332	0	365	523	0	815	495	1194	556
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	0.00	1.00	0.95	0.00	0.95	1.00	1.00	0.00
Uniform Delay (d), s/veh	37.8	0.0	23.8	25.3	0.0	26.9	7.6	0.0	1.1	13.5	19.0	0.0
Incr Delay (d2), s/veh	88.2	0.0	1.3	0.1	0.0	8.9	0.1	0.0	2.2	0.3	1.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.1	0.0	1.6	0.1	0.0	5.6	0.1	0.0	1.0	0.5	4.9	0.0
LnGrp Delay(d),s/veh	126.0	0.0	25.1	25.4	0.0	35.8	7.6	0.0	3.3	13.8	20.3	0.0
LnGrp LOS	F	C	C	D	A		A	B	C			
Approach Vol, veh/h		297			245			432			599	
Approach Delay, s/veh		96.8			35.6			3.4			19.9	
Approach LOS		F			D			A			B	

Time	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.0	44.0		26.0	18.0	36.0		26.0
Change Period (Y+Rc), s	6.0	6.0		6.0	6.0			6.0
Max Green Setting (Gmax), s	4.0	38.0		20.0	12.0	30.0		20.0
Max Q Clear Time (g_c+l1), s	3.1	3.9		22.0	2.2	12.7		13.8
Green Ext Time (p_c), s	0.0	18.1		0.0	0.0	11.4		1.6

Intersection Summary	
HCM 2010 Ctrl Delay	32.3
HCM 2010 LOS	C

Approach	EB	WB	NB	SB
Crosswalk Length (ft)	39.0	36.5	46.2	45.1
Crosswalk Width (ft)	12.0	12.0	12.0	12.0
Total Number of Lanes Crossed	3	3	4	4
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	6	2	4	8
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (ft)	9.0	9.0	9.0	9.0
Right Corner Size B (ft)	9.0	9.0	9.0	9.0
Right Corner Curb Radius (ft)	0.0	0.0	0.0	0.0
Right Corner Total Area (sq.ft)	81.00	81.00	81.00	81.00
Ped. Left-Right Flow Rate (p/h)	0	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (mph)	30	30	30	30
Right Corner Area per Ped (sq.ft)	0.0	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-	-
Ped. Circulation Area (sq.ft)	0.0	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-	-
Pedestrian Delay (s/p)	40.0	40.0	40.0	40.0
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.16	2.05	2.39	2.56
Pedestrian Crosswalk LOS	B	B	B	B

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Two Way Analysis cannot be performed on Signalized Intersection.

## **APPENDIX D**

SimTraffic Reports

Queuing and Blocking Report  
Baseline

2015 Existing AM  
3/26/2015

Intersection: 3: Jefferson/Jefferson St & McClanahan St/Yellow Mountain Rd

Movement	EB	WB	NB	SB	SB
Directions Served	LTR	LT	R	LTR	LT
Maximum Queue (ft)	189	121	67	162	86
Average Queue (ft)	80	51	29	73	32
95th Queue (ft)	142	97	57	132	72
Link Distance (ft)	330	568	568	368	672
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 6: Jefferson St & Weller Ave/Flannagan Dr

Movement	EP	EB	WB	WB	NB	SB	SB	SB
Directions Served	L	TR	LT	R	LTR	LT	T	R
Maximum Queue (ft)	51	54	54	37	204	152	88	88
Average Queue (ft)	14	24	18	12	100	56	21	24
95th Queue (ft)	42	50	46	34	174	117	63	63
Link Distance (ft)	35	35	114	114	672	1440	1440	
Upstream Blk Time (%)	3	6						
Queuing Penalty (veh)	2	3						
Storage Bay Dist (ft)							85	
Storage Blk Time (%)							0	0
Queuing Penalty (veh)							0	0

Intersection: 7: Evans Mill Rd & Weller Ave

Movement	WB	NB	NB	SB
Directions Served	L	T	TR	LT
Maximum Queue (ft)	58	6	79	99
Average Queue (ft)	33	0	8	16
95th Queue (ft)	58	0	40	62
Link Distance (ft)	35	200	200	211
Upstream Blk Time (%)	9			
Queuing Penalty (veh)	4			
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Queuing and Blocking Report  
Baseline

2015 Existing AM  
3/26/2015

Intersection: 11: Jefferson St & Reserve Ave

Movement	EB	ER	TR	NR	NB	SB	SR	SB	SP
Directions Served	L	TR	TR	L	TR	L	T	T	R
Maximum Queue (ft)	319	92	134	177	332	128	142	123	82
Average Queue (ft)	141	28	57	29	145	56	64	54	6
95th Queue (ft)	243	70	105	106	248	102	115	103	52
Link Distance (ft)	505	505	681		1440		467	467	
Upstream Blk Time (%)	0								
Queuing Penalty (veh)	0								
Storage Bay Dist (ft)			100		220				80
Storage Blk Time (%)		1	0	19		0		2	
Queuing Penalty (veh)		0	1	10		0		3	

Network Summary

Network wide Queuing Penalty: 22

Queuing and Blocking Report  
Baseline

2015 Existing PM  
3/26/2015

Intersection: 3: Jefferson/Jefferson St & McClanahan St/Yellow Mountain Rd

Movement	EB	WB	WB	NB	SB	SB
Directions Served	LTR	LT	R	LTR	LT	R
Maximum Queue (ft)	264	70	31	131	166	108
Average Queue (ft)	115	25	5	52	72	43
95th Queue (ft)	206	60	22	108	135	88
Link Distance (ft)	330	568	568	368	672	672
Upstream Blk Time (%)	0					
Queuing Penalty (veh)	0					
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 6: Jefferson St & Weller Ave/Flannagan Dr

Movement	EB	EB	WB	WB	NB	SB	SB	SB
Directions Served	L	TR	LT	R	LTR	LT	T	R
Maximum Queue (ft)	52	55	63	62	153	157	132	56
Average Queue (ft)	20	23	16	19	60	57	39	15
95th Queue (ft)	47	44	45	48	121	126	101	45
Link Distance (ft)	35	35	114	114	672	1440	1440	
Upstream Blk Time (%)	4	4						
Queuing Penalty (veh)	3	3						
Storage Bay Dist (ft)							85	
Storage Blk Time (%)							1	0
Queuing Penalty (veh)							1	0

Intersection: 7: Evans Mill Rd & Weller Ave

Movement	WB	NB	NB	SB	SB
Directions Served	L	T	TR	LT	T
Maximum Queue (ft)	55	4	43	124	59
Average Queue (ft)	28	0	4	26	2
95th Queue (ft)	54	3	23	81	27
Link Distance (ft)	35	200	200	211	211
Upstream Blk Time (%)	8				
Queuing Penalty (veh)	3				
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Queuing and Blocking Report  
Baseline

2015 Existing PM  
3/26/2015

Intersection: 12: Jefferson St & Reserve Ave

Measurement	EB	EB	WB	WB	NB	NB	SB	SB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	T	T	R
Maximum Queue (ft)	299	74	28	142	28	227	81	153	131	85
Average Queue (ft)	136	26	4	70	5	105	35	84	57	5
95th Queue (ft)	245	60	19	120	22	185	70	134	107	47
Link Distance (ft)	505	505			681		1440		467	467
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)		100			100		220			80
Storage Blk Time (%)					3		8		3	0
Queuing Penalty (veh)					0		1		7	0

Network Summary

Network wide Queuing Penalty: 17

Queuing and Blocking Report  
Baseline

2020 Background AM  
3/26/2015

Intersection: 3: Jefferson/Jefferson St & McClanahan St/Yellow Mountain Rd

Movement	EB	WB	NB	SB	SB
Directions Served	LTR	LT	R	LTR	LT
Maximum Queue (ft)	159	116	67	162	91
Average Queue (ft)	81	54	30	75	34
95th Queue (ft)	138	102	56	133	78
Link Distance (ft)	330	568	568	368	672
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 6: Jefferson St & Weller Ave/Flannagan Dr

Movement	EB	EB	WB	WB	NB	SB	SB	SB
Directions Served	L	TR	LT	R	LTR	LT	T	R
Maximum Queue (ft)	56	62	56	46	230	174	110	70
Average Queue (ft)	17	27	18	13	108	62	27	20
95th Queue (ft)	44	53	47	37	188	131	75	55
Link Distance (ft)	35	35	114	114	672	1440	1440	
Upstream Blk Time (%)	4	8						
Queuing Penalty (veh)	2	4						
Storage Bay Dist (ft)							85	
Storage Blk Time (%)							0	0
Queuing Penalty (veh)							0	0

Intersection: 7: Evans Mill Rd & Weller Ave

Movement	WB	WB	NB	SB	SB
Directions Served	L	R	TR	LT	T
Maximum Queue (ft)	58	11	68	110	11
Average Queue (ft)	31	0	7	17	0
95th Queue (ft)	58	8	40	66	8
Link Distance (ft)	35	35	200	211	211
Upstream Blk Time (%)	8	0			
Queuing Penalty (veh)	4	0			
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Queuing and Blocking Report  
Baseline

2020 Background AM  
3/26/2015

Intersection: 12: Jefferson St & Reserve Ave

Movement	EB	EB	WB	NB	NB	SB	SB	SB
Directions Served	L	TR	TR	L	TR	L	T	T
Maximum Queue (ft)	299	163	158	178	317	129	132	110
Average Queue (ft)	157	34	61	27	146	61	62	43
95th Queue (ft)	292	136	112	98	256	107	109	86
Link Distance (ft)	505	505	681		1440		467	467
Upstream Blk Time (%)	1	1						
Queuing Penalty (veh)	0	0						
Storage Bay Dist (ft)			100		220			
Storage Blk Time (%)			2	0	17		1	
Queuing Penalty (veh)			0	0	9		2	

Network Summary

Network wide Queuing Penalty: 22

Queuing and Blocking Report  
Baseline

2020 Background PM  
3/26/2015

Intersection: 3: Jefferson/Jefferson St & McClanahan St/Yellow Mountain Rd

Movement	EB	WB	WB	NB	SB	SB
Directions Served	LTR	LT	R	LTR	LT	R
Maximum Queue (ft)	234	79	40	123	182	126
Average Queue (ft)	119	33	7	56	83	46
95th Queue (ft)	202	68	29	108	155	89
Link Distance (ft)	330	568	568	368	672	672
Upstream Blk Time (%)	0					
Queuing Penalty (veh)	0					
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 6: Jefferson St & Weller Ave/Flannagan Dr

Movement	EB	EB	WB	WB	NB	SB	SB	SB
Directions Served	L	TR	LT	R	LTR	LT	T	R
Maximum Queue (ft)	49	56	53	56	132	141	128	62
Average Queue (ft)	20	25	17	16	60	56	42	17
95th Queue (ft)	46	48	44	43	115	119	99	46
Link Distance (ft)	35	35	114	114	672	1440	1440	
Upstream Blk Time (%)	5	4						
Queuing Penalty (veh)	3	3						
Storage Bay Dist (ft)							85	
Storage Blk Time (%)							1	0
Queuing Penalty (veh)							1	0

Intersection: 7: Evans Mill Rd & Weller Ave

Movement	WB	NB	SB	SB
Directions Served	L	TR	LT	T
Maximum Queue (ft)	52	43	172	25
Average Queue (ft)	29	5	30	1
95th Queue (ft)	54	26	96	18
Link Distance (ft)	35	200	211	211
Upstream Blk Time (%)	9		0	
Queuing Penalty (veh)	3		0	
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Queuing and Blocking Report  
Baseline

2020 Background PM  
3/26/2015

Intersection: 12: Jefferson St & Reserve Ave

Movement	EB	EB	WB	WB	NB	NB	SB	SB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	T	T	R
Maximum Queue (ft)	271	75	28	169	33	301	85	168	153	55
Average Queue (ft)	135	28	3	76	5	109	34	90	59	2
95th Queue (ft)	238	60	18	138	23	222	70	143	111	29
Link Distance (ft)	505	505		681		1440		467	467	
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)		100			100		220			80
Storage Blk Time (%)				5		9		0	3	
Queuing Penalty (veh)				0		1		0	8	

Network Summary

Network wide Queuing Penalty: 20

Queuing and Blocking Report  
Baseline

2020 Buildout (Single Ln) AM  
3/26/2015

Intersection: 3: Jefferson/Jefferson St & McClanahan St/Yellow Mountain Rd

Movement	EB	WB	WB	NB	SB	SB
Directions Served	LTR	LT	R	LTR	LT	R
Maximum Queue (ft)	327	133	76	200	126	68
Average Queue (ft)	135	58	35	100	54	31
95th Queue (ft)	242	109	61	175	107	58
Link Distance (ft)	329	568	568	368	324	324
Upstream Blk Time (%)	0					
Queuing Penalty (veh)	0					
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 6: Jefferson St & Weller Ave/Flannagan Dr

Movement	EB	EB	WB	WB	NB	SB	SB	SB
Directions Served	L	TR	LT	R	LTR	LT	T	R
Maximum Queue (ft)	55	68	79	58	310	356	307	172
Average Queue (ft)	15	39	28	24	218	154	56	12
95th Queue (ft)	42	68	63	54	346	326	212	66
Link Distance (ft)	35	35	119	119	291	1440	1440	
Upstream Blk Time (%)	6	23	0		6			
Queuing Penalty (veh)	5	20	0		37			
Storage Bay Dist (ft)						85		
Storage Blk Time (%)						1		
Queuing Penalty (veh)						1		

Intersection: 7: Evans Mill Rd & Weller Ave

Movement	WB	WB	NB	NB	SB	SB
Directions Served	L	R	T	TR	LT	T
Maximum Queue (ft)	68	26	6	102	206	132
Average Queue (ft)	37	1	0	24	55	6
95th Queue (ft)	62	14	4	73	152	57
Link Distance (ft)	35	35	200	200	211	211
Upstream Blk Time (%)	14	0			0	0
Queuing Penalty (veh)	9	0			0	0
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Queuing and Blocking Report  
Baseline

2020 Buildout (Single Ln) AM  
3/26/2015

Intersection: 11: Jefferson St & Site Entr

Movement	WB	NB	SB	SB
Directions Served	LR	TR	LT	T
Maximum Queue (ft)	295	293	276	76
Average Queue (ft)	206	75	123	7
95th Queue (ft)	347	212	228	43
Link Distance (ft)	268	324	291	291
Upstream Blk Time (%)	32	0	0	
Queuing Penalty (veh)	0	2	1	
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 14: Jefferson St & Reserve Ave

Movement	EB	EB	WB	NB	NB	SB	SB	SB	SB
Directions Served	L	TR	TR	L	TR	L	T	T	R
Maximum Queue (ft)	304	93	144	70	284	93	237	180	56
Average Queue (ft)	154	36	64	25	131	33	120	71	2
95th Queue (ft)	266	73	118	57	235	72	187	143	30
Link Distance (ft)	505	505	681		1440		467	467	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)				100		220			80
Storage Blk Time (%)				3	0	11	0	3	
Queuing Penalty (veh)				0	0	6	0	6	

Network Summary

Network wide Queuing Penalty: 87

Queuing and Blocking Report  
Baseline

2020 Buildout (Single Ln) PM  
3/26/2015

Intersection: 3: Jefferson/Jefferson St & McClanahan St/Yellow Mountain Rd

Movement	EB	WB	NB	SB	SB
Directions Served	LTR	LT	R	LTR	LT
Maximum Queue (ft)	302	75	52	140	232
Average Queue (ft)	160	28	14	66	121
95th Queue (ft)	265	64	39	119	202
Link Distance (ft)	329	568	568	368	323
Upstream Blk Time (%)	0				
Queuing Penalty (veh)	0				
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 6: Jefferson St & Weller Ave/Flannagan Dr

Movement	EB	EB	WB	WB	NB	SB	SB	SB
Directions Served	L	TR	LT	R	LTR	LT	T	R
Maximum Queue (ft)	53	57	90	75	242	173	128	54
Average Queue (ft)	20	40	34	27	114	66	21	12
95th Queue (ft)	47	61	78	61	208	145	75	39
Link Distance (ft)	35	35	119	119	292	1440	1440	
Upstream Blk Time (%)	9	22	0		0			
Queuing Penalty (veh)	10	26	0		0			
Storage Bay Dist (ft)						85		
Storage Blk Time (%)						0	0	
Queuing Penalty (veh)						0	0	

Intersection: 7: Evans Mill Rd & Weller Ave

Movement	WB	NB	SB	SB
Directions Served	L	TR	LT	T
Maximum Queue (ft)	62	120	214	155
Average Queue (ft)	35	24	61	6
95th Queue (ft)	61	80	149	57
Link Distance (ft)	35	201	211	211
Upstream Blk Time (%)	15		1	
Queuing Penalty (veh)	8		0	
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Queuing and Blocking Report  
Baseline

2020 Buildout (Single Ln) PM  
3/26/2015

Intersection: 11: Jefferson St & Site Entr

Movement	WB	NB	SB	SB
Directions Served	LR	TR	LT	T
Maximum Queue (ft)	354	60	179	65
Average Queue (ft)	264	11	66	4
95th Queue (ft)	416	42	133	31
Link Distance (ft)	307	323	292	292
Upstream Blk Time (%)	53			
Queuing Penalty (veh)	0			
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 14: Jefferson St & Reserve Ave

Movement	EB	EB	WB	WB	NB	NB	SB	SB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	T	T	R
Maximum Queue (ft)	308	93	28	203	33	204	48	202	186	145
Average Queue (ft)	162	36	5	82	6	98	22	122	82	17
95th Queue (ft)	295	70	21	153	25	173	48	187	159	91
Link Distance (ft)	505	505		681		1440		467	467	
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)			100		100		220			80
Storage Blk Time (%)				5		7		0	5	0
Queuing Penalty (veh)				0		1		0	16	0

Network Summary

Network wide Queuing Penalty: 61

Queuing and Blocking Report  
Baseline

2020 Buildout (Dbl Ln) AM  
3/26/2015

Intersection: 3: Jefferson/Jefferson St & McClanahan St/Yellow Mountain Rd

Movement	EB	WB	NB	SB	SB
Directions Served	LTR	LT	R	LTR	LT
Maximum Queue (ft)	264	134	71	229	130
Average Queue (ft)	138	56	35	111	49
95th Queue (ft)	228	106	62	199	102
Link Distance (ft)	329	568	568	368	324
Upstream Blk Time (%)	0				
Queuing Penalty (veh)	0				
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 6: Jefferson St & Weller Ave/Flannagan Dr

Movement	EB	EB	WB	WB	NB	SB	SB	SB
Directions Served	L	TR	LT	R	LTR	LT	T	R
Maximum Queue (ft)	50	68	70	58	292	361	277	80
Average Queue (ft)	18	41	23	19	212	145	42	13
95th Queue (ft)	44	67	57	50	334	292	173	56
Link Distance (ft)	35	35	119	119	279	1440	1440	
Upstream Blk Time (%)	6	22		0	5			
Queuing Penalty (veh)	5	19		0	34			
Storage Bay Dist (ft)							85	
Storage Blk Time (%)							0	0
Queuing Penalty (veh)							0	0

Intersection: 7: Evans Mill Rd & Weller Ave

Movement	WB	WB	NB	NB	SB	SB
Directions Served	L	R	T	TR	LT	T
Maximum Queue (ft)	68	26	13	114	218	146
Average Queue (ft)	39	1	0	24	62	10
95th Queue (ft)	65	11	6	81	165	70
Link Distance (ft)	35	35	200	200	211	211
Upstream Blk Time (%)	15	0			1	0
Queuing Penalty (veh)	9	0			0	0
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Queuing and Blocking Report  
Baseline

2020 Buildout (Dbl Ln) AM  
3/26/2015

Intersection: 11: Jefferson St & Site Entr

Movement	WB	WB	NB	SB	SB
Directions Served	L	R	TR	LT	T
Maximum Queue (ft)	190	213	282	269	167
Average Queue (ft)	72	65	72	124	16
95th Queue (ft)	160	148	194	242	97
Link Distance (ft)	268	268	324	279	279
Upstream Blk Time (%)	0	0	0	1	0
Queuing Penalty (veh)	0	0	1	2	1
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 14: Jefferson St & Reserve Ave

Movement	EB	EB	WB	NB	NB	SB	SB	SB	SB
Directions Served	L	TR	TR	L	TR	L	T	T	R
Maximum Queue (ft)	364	87	143	132	288	72	189	173	58
Average Queue (ft)	154	36	62	26	124	30	113	71	1
95th Queue (ft)	281	71	113	77	232	63	176	139	21
Link Distance (ft)	505	505	681		1440		467	467	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)				100		220			80
Storage Blk Time (%)				2		11		0	3
Queuing Penalty (veh)				0		6		0	5

Network Summary

Network wide Queuing Penalty: 82

Queuing and Blocking Report  
Baseline

2020 Buildout (Dbl Ln) PM  
3/26/2015

Intersection: 3: Jefferson/Jefferson St & McClanahan St/Yellow Mountain Rd

Movement	EB	WB	WB	NB	SB	SB
Directions Served	LTR	LT	R	LTR	LT	R
Maximum Queue (ft)	308	90	49	144	198	106
Average Queue (ft)	166	31	16	65	105	44
95th Queue (ft)	270	68	40	120	182	83
Link Distance (ft)	329	568	568	368	323	323
Upstream Blk Time (%)	0					
Queuing Penalty (veh)	0					
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 6: Jefferson St & Weller Ave/Flannagan Dr

Movement	EB	EB	WB	WB	NB	SB	SB	SB
Directions Served	L	TR	LT	R	LTR	LT	T	R
Maximum Queue (ft)	51	59	107	82	271	194	152	74
Average Queue (ft)	21	42	35	24	109	62	23	11
95th Queue (ft)	48	65	81	59	221	149	83	47
Link Distance (ft)	35	35	119	119	279	1440	1440	
Upstream Blk Time (%)	8	24	0		0			
Queuing Penalty (veh)	9	28	0		0			
Storage Bay Dist (ft)						85		
Storage Blk Time (%)						0	0	
Queuing Penalty (veh)						0	0	

Intersection: 7: Evans Mill Rd & Weller Ave

Movement	WB	WB	NB	SB	SB
Directions Served	L	R	TR	LT	T
Maximum Queue (ft)	54	9	100	226	188
Average Queue (ft)	33	0	24	89	21
95th Queue (ft)	56	6	75	211	111
Link Distance (ft)	35	35	200	211	211
Upstream Blk Time (%)	12	0		2	0
Queuing Penalty (veh)	7	0		0	0
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Queuing and Blocking Report  
Baseline

2020 Buildout (Dbl Ln) PM  
3/26/2015

Intersection: 11: Jefferson St & Site Entr

Movement	WB	WB	NB	SB	SB
Directions Served	L	R	TR	LT	T
Maximum Queue (ft)	310	238	75	194	126
Average Queue (ft)	149	74	18	67	9
95th Queue (ft)	299	227	56	140	55
Link Distance (ft)	307	307	323	279	279
Upstream Blk Time (%)	10	7			
Queuing Penalty (veh)	0	0			
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 14: Jefferson St & Reserve Ave

Movement	EB	EB	WB	WB	NB	NB	SB	SB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	T	T	R
Maximum Queue (ft)	253	94	28	162	36	233	46	215	185	142
Average Queue (ft)	134	36	3	75	8	95	18	122	83	13
95th Queue (ft)	231	71	18	139	30	173	44	193	161	78
Link Distance (ft)	505	505		681		1440		467	467	
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)			100		100		220			80
Storage Blk Time (%)				4		6		0	5	0
Queuing Penalty (veh)				0		1		0	15	0

Network Summary

Network wide Queuing Penalty: 61

Queuing and Blocking Report  
Baseline

2020 Buildout (Dbl Ln & MOD Jeff 2SBT & Rt in) AM

3/27/2015

Intersection: 3: Jefferson/Jefferson St & McClanahan St/Yellow Mountain Rd

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LT	R	LTR	LT	R
Maximum Queue (ft)	272	149	75	201	134	84
Average Queue (ft)	137	61	34	106	49	31
95th Queue (ft)	232	116	62	179	103	66
Link Distance (ft)	329	568	568	368	324	324
Upstream Blk Time (%)	0					
Queuing Penalty (veh)	0					
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 6: Jefferson St & Weller Ave/Flannagan Dr

Movement	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	TR	LT	R	L	TR	L	T	R
Maximum Queue (ft)	66	69	77	63	89	265	141	79	39
Average Queue (ft)	22	44	26	22	35	140	59	14	6
95th Queue (ft)	55	65	63	51	86	245	114	50	27
Link Distance (ft)	41	41	113	113		279	1440	1440	
Upstream Blk Time (%)	8	21				0			
Queuing Penalty (veh)	7	19				1			
Storage Bay Dist (ft)						40			85
Storage Blk Time (%)						8	22	0	
Queuing Penalty (veh)						47	12	0	

Intersection: 7: Evans Mill Rd & Weller Ave

Movement	WB	WB	NB	NB	SB	SB
Directions Served	L	R	T	TR	LT	T
Maximum Queue (ft)	62	26	8	100	215	94
Average Queue (ft)	37	1	0	25	55	9
95th Queue (ft)	61	12	4	76	154	65
Link Distance (ft)	41	41	200	200	211	211
Upstream Blk Time (%)	5	0			0	
Queuing Penalty (veh)	3	0			0	
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Queuing and Blocking Report  
Baseline

2020 Buildout (Dbl Ln & MOD Jeff 2SBT & Rt in) AM  
3/27/2015

Intersection: 11: Jefferson St & Site Entr

Movement	WB	WB	NB	SB	SB	SB
Directions Served	L	R	TR	L	T	T
Maximum Queue (ft)	151	123	133	188	31	12
Average Queue (ft)	55	51	41	92	2	2
95th Queue (ft)	114	94	104	159	17	13
Link Distance (ft)	269	269	324		279	279
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)				170		
Storage Blk Time (%)				1		
Queuing Penalty (veh)				1		

Intersection: 14: Jefferson St & Reserve Ave

Movement	EB	EB	WB	NB	NB	SB	SB	SB	SB
Directions Served	L	TR	TR	L	TR	L	T	T	R
Maximum Queue (ft)	261	91	147	62	265	72	157	211	145
Average Queue (ft)	135	37	62	23	108	30	81	104	33
95th Queue (ft)	238	79	113	52	199	61	142	177	132
Link Distance (ft)	505	505	681		1440		467	467	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)				100		220			80
Storage Blk Time (%)				2		7		14	
Queuing Penalty (veh)				0		4		25	

Network Summary

Network wide Queuing Penalty: 119

Queuing and Blocking Report  
Baseline

2020 Buildout (Dbl Ln & MOD Jeff FULL 2SBT & Rt in) PM

3/27/2015

Intersection: 3: Jefferson/Jefferson St & McClanahan St/Yellow Mountain Rd

Movement	EB	WB	NB	SB	SB
Directions Served	LTR	LT	R	LTR	LT
Maximum Queue (ft)	305	84	44	150	229
Average Queue (ft)	162	28	16	73	106
95th Queue (ft)	263	68	40	130	194
Link Distance (ft)	329	568	568	368	324
Upstream Blk Time (%)	0				
Queuing Penalty (veh)	0				
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 6: Jefferson St & Weller Ave/Flannagan Dr

Movement	EB	EB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	TR	LT	R	L	TR	L	T	R
Maximum Queue (ft)	49	68	85	70	89	172	71	108	55
Average Queue (ft)	24	46	32	24	27	77	30	26	5
95th Queue (ft)	53	61	68	56	69	148	64	73	26
Link Distance (ft)	41	41	113	113		279	1440	1440	
Upstream Blk Time (%)	8	24	0						
Queuing Penalty (veh)	9	27	0						
Storage Bay Dist (ft)					40			85	
Storage Blk Time (%)					3	15		0	0
Queuing Penalty (veh)					12	6		0	0

Intersection: 7: Evans Mill Rd & Weller Ave

Movement	WB	WB	NB	SB	SB
Directions Served	L	R	TR	LT	T
Maximum Queue (ft)	54	40	131	226	188
Average Queue (ft)	32	4	27	94	18
95th Queue (ft)	54	24	85	209	102
Link Distance (ft)	41	41	200	211	211
Upstream Blk Time (%)	4	0	0	1	0
Queuing Penalty (veh)	2	0	0	0	0
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Queuing and Blocking Report  
Baseline

2020 Buildout (Dbl Ln & MOD Jeff FULL 2SBT & Rt in) PM  
3/27/2015

Intersection: 11: Jefferson St & Site Entr

Movement	WB	WB	NB	SB	SB	SB
Directions Served	L	R	TR	L	T	T
Maximum Queue (ft)	221	134	77	104	39	39
Average Queue (ft)	106	43	14	48	4	4
95th Queue (ft)	200	90	48	87	23	24
Link Distance (ft)	308	308	324		279	279
Upstream Blk Time (%)	0	0				
Queuing Penalty (veh)	0	0				
Storage Bay Dist (ft)				170		
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 14: Jefferson St & Reserve Ave

Movement	EB	EB	WB	WB	NB	NB	SB	SB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	T	T	R
Maximum Queue (ft)	357	181	28	160	32	213	46	189	321	145
Average Queue (ft)	177	41	3	76	7	100	16	84	125	54
95th Queue (ft)	365	117	18	134	29	177	44	146	218	167
Link Distance (ft)	505	505		681		1440		467	467	
Upstream Blk Time (%)	1	0								
Queuing Penalty (veh)	0	0								
Storage Bay Dist (ft)			100		100		220			80
Storage Blk Time (%)				3		7		0	17	
Queuing Penalty (veh)				0		1		0	48	

Network Summary

Network wide Queuing Penalty: 106

## **APPENDIX E**

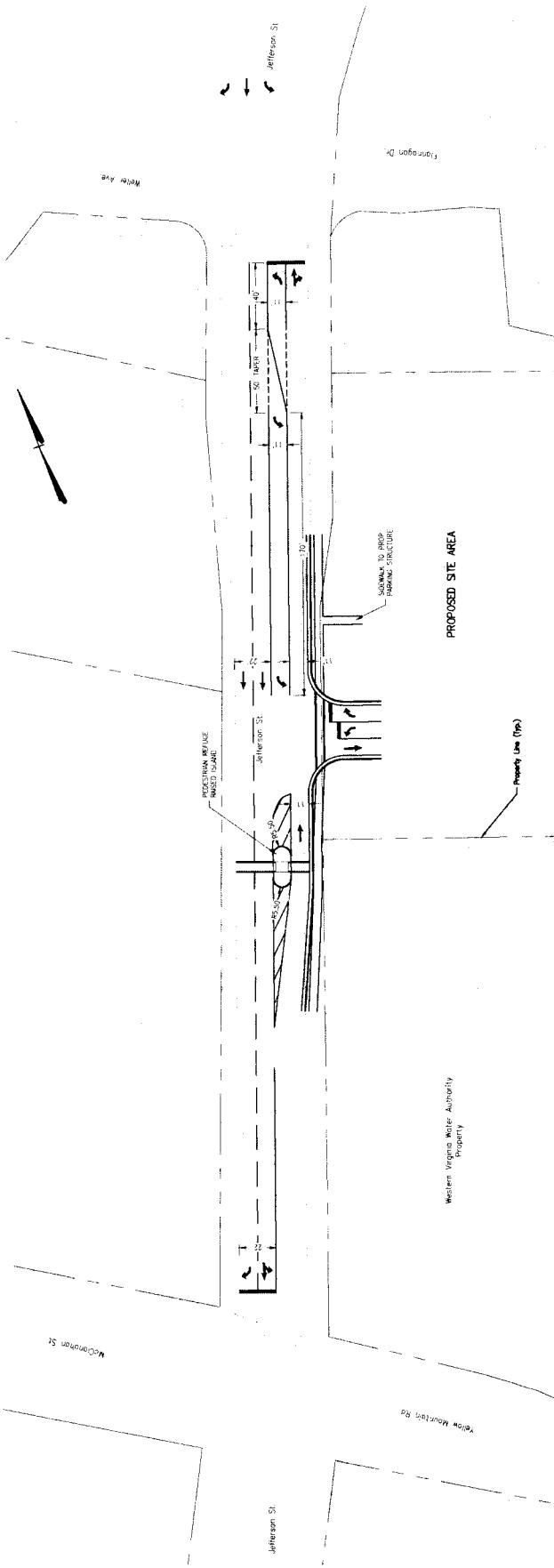
Conceptual Jefferson Street Layout

Jefferson Street Conceptual Layout

140

Vertical Scale:	Horizontal Scale: 1" = 50'	Commission Number: <b>3507</b>	Sheet No.: <b>1</b>
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B. Dugay 1587 Remsen, NY 13046-0000 at Weller, Inc. 3/27/2015 9:48:00 AM



## **APPENDIX F**

Left and Right Turn Lane Warrants (VDOT Road Design Manual)

### Warrants for Left Turn Storage Lanes on Two-Lane Highways

Advancing volume and opposing volumes (VPH), speed and percent left turns are used to determine whether a left turn storage lane is warranted on two-lane highways.

The warrants in table below are taken from the 2011 AASHTO Green Book, **Chapter 9, Section 9.7.3**, Page 9-132, Table 9-23. They were derived from Highway Research Report No. 211, Figures 2 through 19, for required storage length determinations.

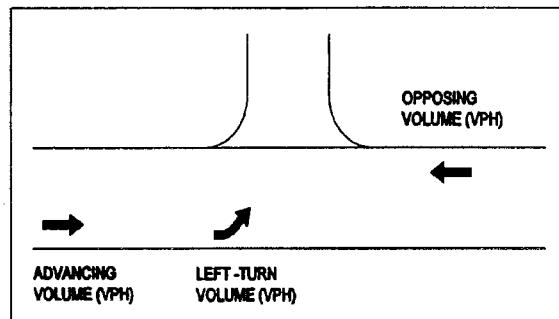
#### WARRANTS FOR LEFT TURN LANES ON TWO-LANE HIGHWAYS

VPH OPPOSING VOLUME	ADVANCING VOLUME			
	5% LEFT TURNS	10% LEFT TURNS	20% LEFT TURNS	30% LEFT TURNS
<b>40-MPH DESIGN SPEED*</b>				
800	330	240	180	160
600	410	305	225	200
400	510	380	275	245
200	640	470	350	305
100	720	515	390	340
<b>50-MPH DESIGN SPEED*</b>				
800	280	210	165	135
600	350	280	195	170
400	430	320	240	210
200	550	400	300	270
100	615	445	335	295
<b>60-MPH DESIGN SPEED*</b>				
800	230	170	125	115
600	290	210	160	140
400	365	270	200	175
200	450	330	250	215
100	505	370	275	240

TABLE 3-1

Source: Adapted from 2011 AASHTO Green Book, **Chapter 9, Section 9.7.3**, Page 9-132, Table 9-23

\* USE DESIGN SPEED IF AVAILABLE,  
IF NOT USE LEGAL SPEED LIMIT.



#### Example:

Two-lane highway with 40-MPH operating speed

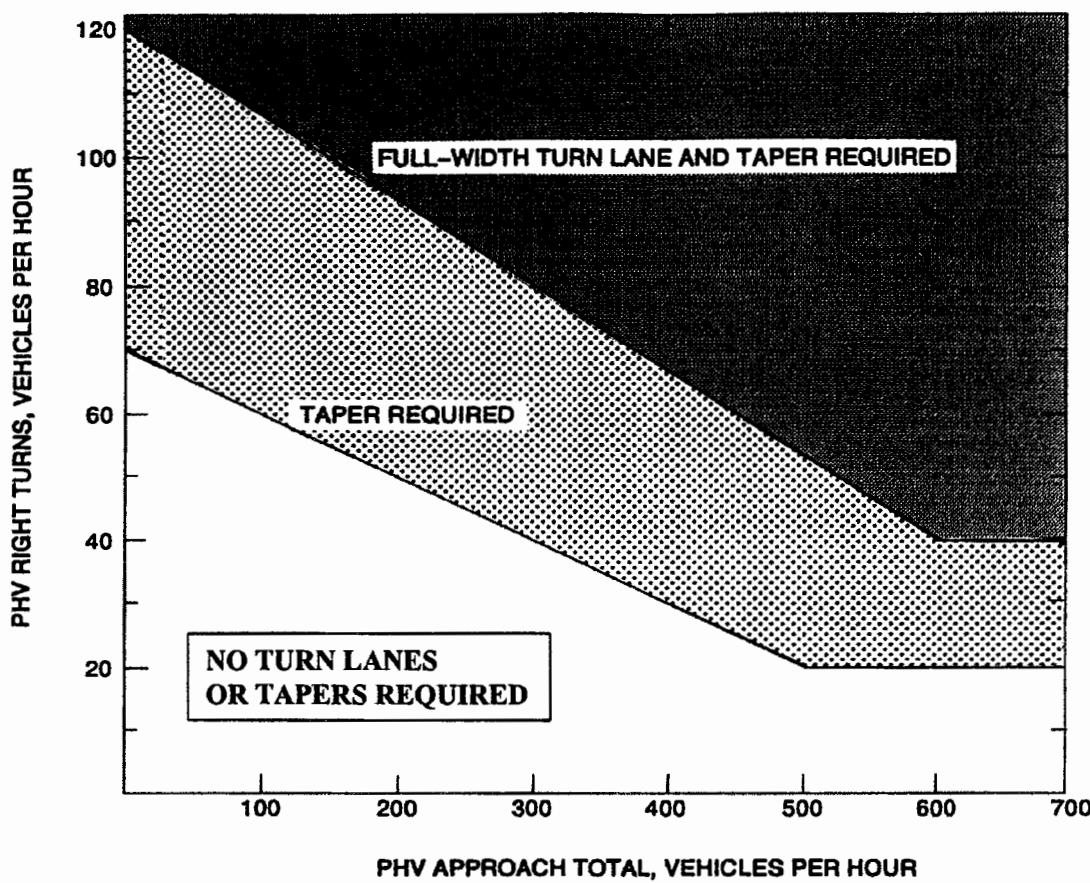
Opposing Volume (VPH) - 600

Advancing Volume (VPH) - 440

Left-Turn Volume (VPH) - 44 or 10% of Advancing Volume

With opposing volume (VPH) of 600 and 10% of advancing volume (VPH) making left turns, and advancing volume (VPH) of 305 or more will warrant a left-turn lane.

When the Average Running Speed on an existing facility is available, the corresponding Design Speed may be obtained from IIM LD-117.



Appropriate Radius required at all Intersections and Entrances (Commercial or Private).

#### LEGEND

PHV - Peak Hour Volume (also Design Hourly Volume equivalent)

#### Adjustment for Right Turns

For posted speeds at or under 45 mph, PHV right turns > 40, and PHV total < 300.

Adjusted right turns = PHV Right Turns - 20

If PHV is not known use formula: PHV = ADT x K x D

K = the percent of AADT occurring in the peak hour

D = the percent of traffic in the peak direction of flow

Note: An average of 11% for K x D will suffice.

**FIGURE 3-26 GUIDELINES FOR RIGHT TURN TREATMENT (2-LANE HIGHWAY)**